

INSTRUCTION MANUAL

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Product: RLZA-82R

Product code: 0 005 _____



The product picture may differ from the actual product

DST 

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1 SAFETY

1.1 AIM OF THIS DOCUMENTATION

This document is included at delivery and is therefore an integral part of the equipment. It describes the machine's design and configuration at the time of delivery.

In the interest of safety, please study this documentation before installing or operating the equipment.

Instructions relating to safety, handling, operation and maintenance are to be followed.

Noncompliance can result in serious personal injury or damage to the machinery and may invalidate manufacturers' liabilities and warranties.

This documentation includes guidance for:

- Installers
- Operators
- Maintenance staff

Please retain this documentation throughout the lifetime of the equipment.

1.2 ACCENTUATIONS IN THE TEXT



Caution! Identifies hazards that could lead to damage of the equipment.



Warning! Indicates "potentially" hazardous situations, which could result in damage of the equipment, serious personal injury or death.



Danger! Indicates "imminently" hazardous situations, which could result in damage of the equipment, serious personal injury or death.



Attention! Indicate important information or instruction that requires special attention.

1.3 INTENDED USE

This equipment is specifically designed for atmospheric air drying. It is unsuitable for any other use. For further advice please contact your DST representative.

Unless specifically stated in this manual, the following applications are prohibited:

- Conditioning of gases (other than air).
- Conditioning of air contaminated with chemicals or aggressive elements.
- Conditioning of air containing flammable or explosive elements.
- On rooms or air systems having a potentially explosive atmosphere (ATEX).
- Conditioning of air at elevated pressures.
- Air that enters the rotor is not properly filtered with at least G4 class.
- Compounds in the air that will possibly deteriorate the silica gel rotor. See appendix for detailed information.

1.3.1 HAZARDOUS OPERATING CONDITIONS

Operation of the system is deemed to be hazardous, if:

- Is not operated inside or is not protected within a weatherproof enclosure.
- Is not operated within the permitted operating parameters (see technical specifications).
- Is operated outside the scope of 'normal' use (see intended use).

1.3.2 RESPONSIBILITIES OF THE OPERATOR

It is the responsibility of the operator of the system to ensure that all personnel engaged with installation, operation, maintenance and service of the equipment have read and understand the relevant sections of this manual.

For your own safety, wear the appropriate personal protective equipment (PPE).

1.3.3 MINIMISING HAZARDS

To ensure risk to personnel is minimised:

- Ensure that all activities relating to this equipment are carried out by qualified and authorised staff only.
- Identify and prevent potential safety hazards in the environment.

To ensure a failure-free operation:

- Keep this manual ready to hand with the unit.
- Use the machine as intended only.
- Only use the machine if it is fully functional.
- Check the condition of the machine before using.
- Check the machine on operational efficiency at regular intervals.
- Carry out maintenance and testing at the prescribed intervals.

1.4 SAFETY

This equipment conforms to the appropriate European regulations and directives and is designed and manufactured to be safe and reliable in operation.

Continued safety and reliability is entirely dependent on correct handling, installation, operation and maintenance of the equipment supplied.

1.5 INSPECTION OF GOODS

Check for transportation damage! Continue the use of this product only if you assess it as being undamaged and faultless. Any damage must be recorded by the forwarder at time of delivery and reported to the supplier of the equipment at the earliest opportunity.

Please check condition of the equipment carefully for damage upon receipt and after removal of all packaging.

1.6 SAFETY ADVICE REGARDING TRANSPORTATION



Warning! Only use tested and certified lifting equipment to offload and position the unit.



Warning! If a fork lift is used to move the unit, please ensure the load is evenly balanced.



Warning! If lifting the unit on a pallet, ensure the unit is firmly secured to the pallet.



Warning! Evacuate and secure the danger area during lifting and positioning of the unit.

1.7 INSTALLATION



Attention! Installation, testing, commissioning preventative and corrective maintenance must be carried out by a qualified person or under supervision of a qualified person. Wherever possible, all mechanical work must be carried out with the electric supply switched off.

A qualified person (mechanical) is defined in this manual as:

- A mechanical technician or engineer qualified to service and maintain air conditioning plant and associated systems.
- Has completed the appropriate health and safety training.
- Has read and is familiar with the contents of this manual.
- Is professionally competent to commission and service this type of equipment.



Caution! The air dryer is designed for internal installation. For external use it will require a weatherproof enclosure.



Caution! The air dryer or rotor cassette requires installing on a horizontal plane.

! **Attention!** The air ducts must be vibration free and sizable enough to prevent pressure build-up when conveying the incoming and outgoing air from the unit. Do not support the full weight of the ducts onto the unit.

! **Attention!** Wet air outlet duct must be insulated to prevent condensate and ice build-up during cold conditions.

1.8 ELECTRICAL INSTALLATION

! **Attention!** Wherever possible, all electrical work must be carried out with the electric supply switched off. It is recommended that electrical isolators are locked in the off position. All electrical work must be carried out by a qualified person or under supervision of a qualified person.

A qualified person (electrical) is defined in this manual as:

- An electrical technician or engineer qualified to service and maintain air conditioning plants.
- Has completed the appropriate health and safety training.
- Has read and is familiar with the contents of this manual.

! **Danger!** If the unit control panel isolation switch is off, the incoming cable terminals may still be live!

! **Danger!** If working on the unit's isolation switch, ensure that electrical power is isolated and locked to prevent accidental resetting.

! **Danger!** Electrical connection are to be made in accordance with local regulations.

! **Attention!** Check incoming electrical voltage and operating frequency conform to the electrical wiring diagram and the manufacturer's type plate attached to the unit.

! **Caution!** Loose terminal connections! Due to vibration during transportation it is advised that electrical terminals are checked for security and retightened where necessary. The following connecting terminals in the electrical control cabinet should be checked periodically and retightened if necessary:

- Connecting terminals in the main isolator switch.
- Connecting terminals in main components of the heater circuits.
- Connecting terminals in main components of the fans circuits.

Periodical as defined in this manual means:

- During installation.
- During maintenance.

! **Caution!** Parameters used in the electrical protection and alarm circuits must not be modified or adjusted. Factory (default) parameters are shown in the electrical wiring diagrams, technical data or parameter list.

! **Warning!** This equipment will contain high voltage electrical components!

1.9 COMMISSIONING

! **Attention!** Equipment fans can produce noise levels above 80 dB (A). Use ear protection if remaining close to an operating machine for any length of time.

1.10 OPERATION

! **Caution!** Use the normal shut down procedure as described in operation. If switching the unit off in an EMERGENCY, the main isolator switch or emergency stop button may be used. However, residual heat from the heater elements will remain in the unit and this can result in damage to components close to the heater.

! **Caution!** On no account should the unit be operated without air filters installed!

! **Caution!** Do not expose the unit to ambient temperature that exceeds 50°C/122°F (e.g inside a plant room) for longer period of time. This may damage the internal components!

! **Caution!** Do not process air with temperature higher than 40°C/104°F. This may damage the internal components!

1.11 MAINTENANCE

! **Caution!** Defective electrical components and defective wiring must be replaced immediately. The equipment must not be operated until the defect has been repaired and the unit has been retested.

! **Caution!** For maintenance purposes, use the normal shut down procedure as described in operation and allow the system to cool down before attempting to access internal components.

! **Danger!** To prevent unintentional restart, ensure that the main isolator switch is off and power isolated before servicing internal components.

! **Attention!** Advise all operating & maintenance personnel regarding automatic restart function if applicable.

! **Attention!** Pay attention to accessibility requirements for maintenance and service purposes.

! **Danger!** Only certified personnel are allowed to adjust, repair and modify the unit's refrigerant system. Contact your DST representative for any questions (Econosorb & Frigosorb only).

! **Caution!** The operation of all electric safety devices are to be checked at commissioning and during service/maintenance. Under no circumstances are these devices to be deactivated (e.g., adjustment or bridging).

! **Caution!** Do not rinse the unit with water.

! **Warning!** Allow fans to come to a complete stop and the unit must be isolated from the electrical supply before removing any panels!

! **Warning!** The unit is equipped with a heating element. Do not touch the equipment whilst it is hot. Allow the unit to cool for at least 30 minutes before any service or maintenance is performed.

! **Danger!** The unit must be manually isolated from the electrical supply by turning the main isolator to "OFF" and secured with a lock pad before conducting any types of service and maintenance work on the unit.

1.12 DISPOSAL/RECYCLING

When the unit is no longer in use and taking out of service - dismantle the unit and recycle the components according to the local regulations. Contact your DST representative for any questions.

2 INTRODUCTION

2.1 TYPE PLATE OVERVIEW

The manufactured unit is identified by a type plate. The type plate is position on front or the right side of the unit. The type plate is structured as followed:

1. Model designation
2. Serial number
3. Electrical supply information
4. Regeneration heater power

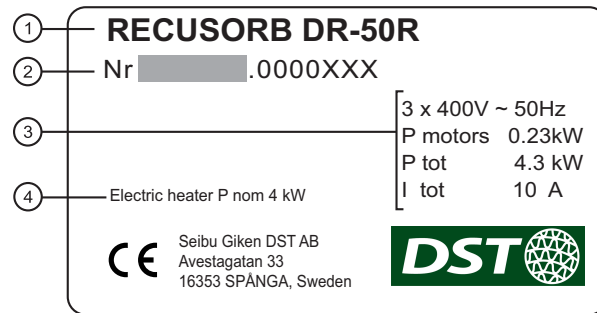


FIGURE 1: Type plate

2.2 SERIAL NUMBER STRUCTURE

The serial number printed on the type plate is composed of codes to enable a fast identification of the unit. Units manufactured pre 2006 use as modified serial number structure which does not match the current structure.

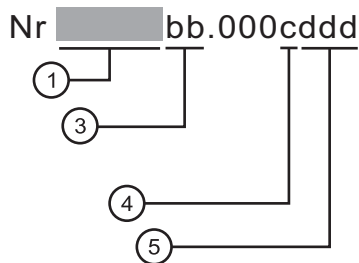


FIGURE 2: Serial number structure for a single-phase unit

1. Model designation
2. Regeneration heater (a) - the type of heater the unit is equipped with.

R = Resistive (electric)	HW = Hot water
G = Gas	WW = Warm water
S = Steam	D = Diesel
	O = Oil

3. Special unit (**bb**) - Code to indicate a special manufactured unit.

SP = Special

Note: The absent of "SP" will indicate it is a standard manufactured unit, e.g. DR-50RSP is a special manufactured unit. DR-50R is a standard manufactured unit.

4. Serial number (**c**) - To indicate if the unit belong to a special or standard manufactured serie.

0 = Standard manufactured serie

7 = Special manufactured serie

5. Serial number (**ddd**) - Serial number for the manufactured unit (**ddd**).

001, 002, 003, 004...n

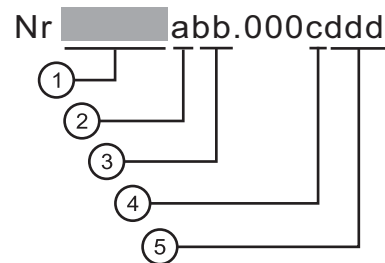


FIGURE 3: Serial number structure for a three-phase unit

2.3 OTHER UNIT INFORMATION

In the appendix, a component list containing spare parts with articles numbers as well as the electrical diagram number for the electrical box. Special unit with custom installed components will have a list of installed options added on the same list.

3 PRODUCT DESCRIPTION

3.1 PRODUCT OVERVIEW

1. Regeneration filter
2. Process filter
3. Rotor
4. Regeneration heater
5. Process fan
6. Dry air out
7. Electrical box with control panel
8. Wet air out
9. Regeneration fan
10. Process air in
11. Regeneration air in

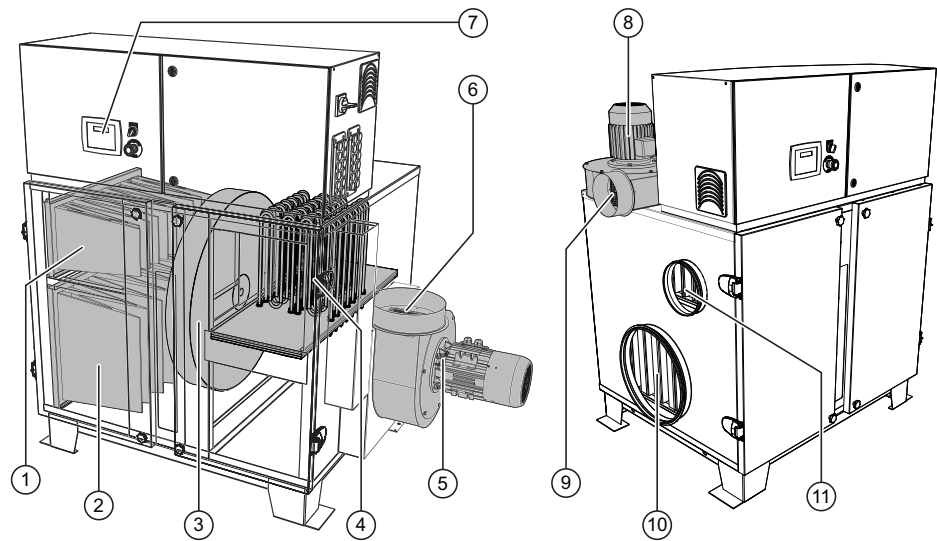


FIGURE 4: Product overview

Variation of installation and components may vary.

3.2 APPLICATIONS

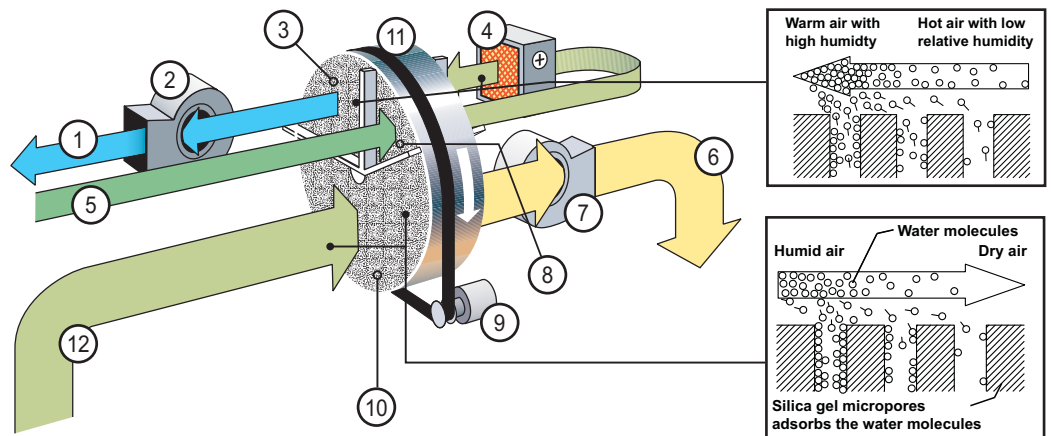
DST desiccant type dehumidifiers are normally used where dry air is essential to the various manufacturing processes used in chemical, pharmaceutical, food or confectionery industries, or where a dry environment is required for storing and handling of moisture sensitive products and raw materials.

The well proven air drying technology using the adsorption principle provides great flexibility in solving humidity problems. It offers the user independent humidity control, down to dew points far lower than the effective operating range of refrigeration dehumidifiers.

3.3 PRINCIPLE OF OPERATION

It works on a continuous process with two air streams of different flow rates, normally having a flow ratio of approximately 3:1. The greater flow, *process air*, is dried as it passes through the dehumidifier, while the smaller flow, *regeneration air*, is used to heat the rotor material to drive the adsorbed moisture vapour from the desiccant. The moisture which is removed from the process air, is transferred over to the other as the rotor turns slowly.

1. Wet air outlet
2. Regeneration air fan
3. Regeneration sector
4. Regeneration heater
5. Regeneration air in
6. Dry air outlet
7. Process air fan
8. Purge sector
9. Rotor motor
10. Process sector
11. Rotor
12. Process air inlet



RECUSORB Light is a continuous dehumidifier with internal energy recovery and able to reach very low dew points.

During regeneration, sensible heat is adsorbed by the rotor material. The rotor rotates and enters a small purge sector where part of the incoming regeneration air is pre-heated. At the same time, another part of the regeneration air is by-passing the purge sector and is mixed with the heated regeneration air. As a result, the regeneration air is pre-heated before the air enters the regeneration heater, thus reducing the amount of energy to heat the air in the regeneration heater. Purge sector will also deadsorb some of the water molecules before the rotor enters the process sector.

Now that the excess heat in the rotor material is reduced by the purge sector. This will reactivate the rotor materials to prepare it for adsorption. When the rotor finally enters the process sector, the adsorbing starts immediately until the rotor passes over to the regeneration sector. In this sector the hot air will heat the rotor materials and deadsorbs the water molecules in to the air and exits through the wet air outlet.

FIGURE 5: Principle of operation & rotor

4 INSTALLATION

4.1 UNIT INSTALLATION

Follow the directions regarding installation of heavy and medium weight dehumidifiers.

Note: Use the installation guidelines as a reference only.

4.1.1 FORK LIFTING

The unit can be off-loaded and positioned using a fork lift by lifting between the feet of the unit, alt., on some dehumidifiers, lift the unit using the built-in handles.

- The forks must be of sufficient length to be in contact with both sides of the base frame.
- The forks should be initially positioned centrally across the middle sections of the unit but must be checked for balance prior to final lifting.
- Units equipped with handles are very heavy. Do not lift the unit single-handedly! Always ask for assistance or use lifting aid!

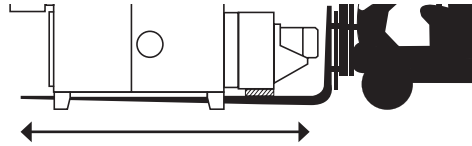


FIGURE 6: Forks in contact with both sides of the frame.

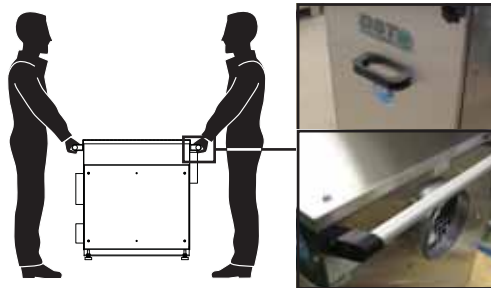


FIGURE 7: Units with handles

4.1.2 TRANSPORT

Dehumidifiers with external fans or a high centre of gravity runs the risk of tipping. Use caution when lifting and moving the dehumidifier.

Note:

- Secure any panels, doors or loose equipment.
- Keep the unit balanced at all times when moving the unit.
- See safety chapter regarding lifting safety.

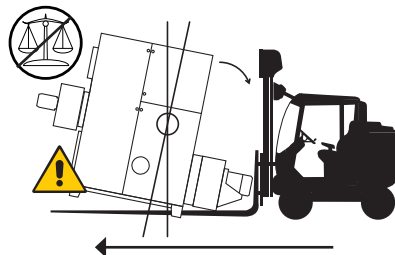


FIGURE 8: Exercise caution when lifting and transport a unit

If not balanced, the unit may run the risk of tipping during transport.

See "9 Technical data" for weight information.

4.1.3 POSITIONING

Position the machine with adequate working space around the unit to allow inspection and service. Size of unit and the position of the access panels/doors vary depending on the model. To avoid incorrect positioning, see the dimensional drawing in the appendix for service space and foot bolt-hole dimensions.

4.2 SECURING THE UNIT

Note: Applies for R-51/61, RZ and CZ only.

To allow securing of the dehumidifier to the floor or to a pedestal, four brackets with predrilled bolt-holes are included with the unit.

At delivery, the brackets are used to secure the unit to the pallet for transportation. Do not discard the foot brackets (!) Remove and reuse them if required.

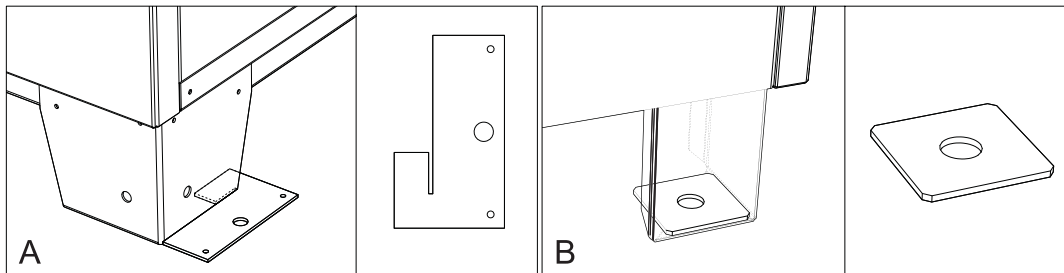


FIGURE 9: Transportation bracket

A) RZ and CZ, B) R-51/61.

4.3 GENERAL DUCT WORK INSTALLATION

The guidelines are to assist the installers and operators to adjust the duct/dehumidifier installation. Consult your DST representative or local mechanical installation company for more information.

- Avoid recirculation from the separate airflows, direct entering and exiting airflow away from each other.
- Check if the dry air is well distributed in the dehumidified area.
- The regeneration air in and wet air out has to be connected to the outside of the dehumidified area, preferable outdoor.*
- To increase the lifetime of the filter, it is recommended taking air from a higher level where dust and other particles are kept at minimum.
- Install dry air out duct/channel at a high level.
- To maximize the drying capacity, free blowing on dry air out without airflow reduction is recommended.
- Allow wet air to disperse freely when exiting the duct.
- It is recommended to insulate the wet air duct*.
- The wet air duct must be installed at a sloping outwards angle, due to risk of condensation inside the duct work. The setup will also prevent condensation flowing back into the dehumidifier.*
- If the duct needs to be installed higher than the wet air outlet, fix a condensate drain at the lowest point of the duct.*
- Do not connect the air outlet to a ventilation system which can create pressure that will result in reverse airflow through the dehumidifier.

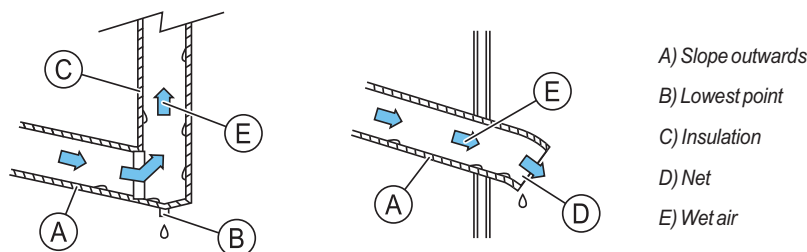


FIGURE 10: Installation of wet air out duct

4.4 PIPE WORK CONNECTIONS

Pipe work should be connected in accordance with good engineering practise and ensure connections is made to screwed fittings on the unit. Follow the mandatory and recommended piping installation.

4.4.1 DST SCOPE OF SUPPLY AND EXTERNAL CONTRACTOR SUPPLY

To ensure failure-free operation, DST recommends the external steam supply connection and setup as followed. DST will not be held accountable for any hardware damage that might occur if the recommendations are not complied.

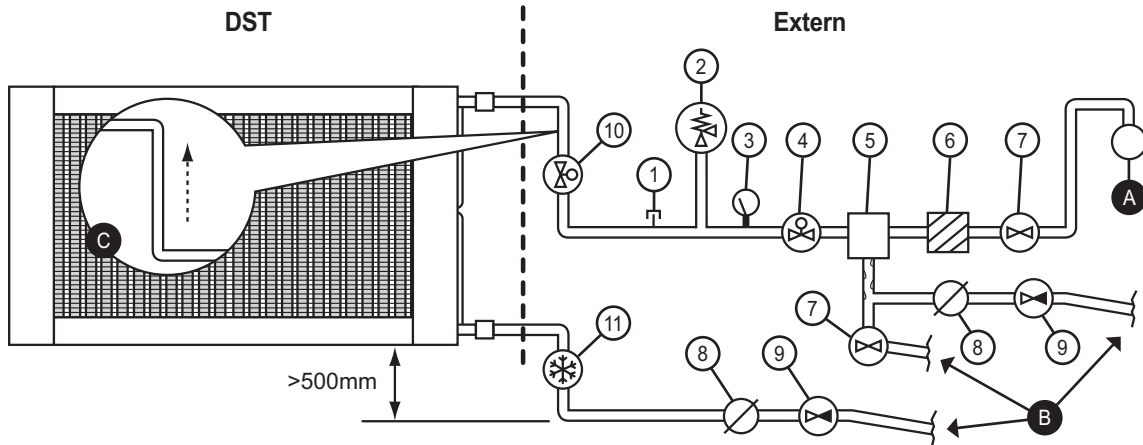


FIGURE 11: Steam coil and pipe installation

During installation, the installers “MUST” configure the condensate pipe with vertical drop of >500mm to prevent condensate water flowing into the coil and an control valve + actuator (optional).

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Automatic air vent (Spirax sarco, type VB or equal) 2. Safety valve. Type SC or equal 3. Pressure gauge 4. Spring loaded motor valve ON/OFF. Closed when the unit is not in operation. 5. Separator 6. Filter. Type Fig or equal 7. Stop valve. Type BSA (mushroom valve alt. M10S (ball valve) or equal 8. Condensate trap, ball float type, spirax sarco, type FT or equal | <ol style="list-style-type: none"> 9. Non-return valve DCV (flange), LCV (thread) or equal 10. Control valve + actuator (Optional) 11. Freezing protection device (optional) <p>A) Steam supply
B) Sloping outwards angle
C) Note: Steam pipe should always go up the coil!</p> |
|--|---|

! Attention!

General information:

- Maximum working pressure: 10 Bar
- Maximum temperature: 185°C
- Steam quality of 8-9 pH and oxygen free
- If condensate temperature on outlet pipe is <7°C, equip the steam coil with a freeze protection device.

4.5 HUMIDISTAT/ELECTRONIC CONTROLLER INSTALLATION

Install the humidistat/electronic controller away from the dry air out path to avoid false readings.

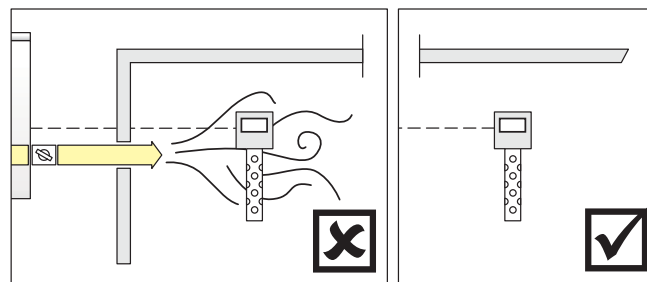


FIGURE 12: Humidistat positioning

4.6 ELECTRICAL CONNECTION

Electrical components should be connected to the supply according to the local regulations and requirements.

4.6.1 POWER SUPPLY

The incoming three-phase cable with L1, L2 and L3 are directly connected to the main switch and PE-cable connected to the earth bar.

The electrical feed must be provided on-site in accordance with the electrical diagram and local requirements.

See electrical diagram for a detailed layout and description.

4.6.2 EARTH LEAKAGE CIRCUIT BREAKER

Due to the high capacitive currents present in the AC drive, earth leakage circuit breakers may not function properly.

Note: This is only applicable if the unit is equipped with a frequency converter.

4.6.3 HUMIDISTAT CONNECTIONS

The dehumidifier has a connection for a 1-step* or 2-step** humidistat.

See electrical diagram for connections.

**) For models with no selectable heater output.*

****) For models with at least two selectable heater output.*

4.6.4 0-10VDC SIGNAL

Units with optional connections points for an electronic humidity controller or another regulator signal is marked on the electrical diagram.

See electrical diagram for connections.

4.6.5 REMOTE CONTROL

The unit has a connection point for a remote switch.

See electrical diagram for connections details.

4.6.6 POTENTIAL-FREE SIGNALS

Potential free contacts are marked on the electrical diagram for connecting external indicators. These indicators are used to transmit signals to a remote centre, to indicate if unit or fans are still in operation.

Standard indicator

- Alarm indicator
- Run indicator*
- Regeneration fan indicator*
- Process fan indicator*

Optional indicators (N/A for certain units)

- Filter guard (regeneration) indicator
- Filter guard (process) indicator
- MAN/AUTO indicator

Each indicator, standard or optional, are marked on the electrical diagram to indicate whether it is a normally closed or a normally opened circuit.

**) Standard indicator may differ depending on model and configuration. See electrical diagram for more information.*

5 OPERATION CHECK & ADJUSTMENT

5.1 PRE-OPERATION CHECK

Danger!

The operator of the system has to ensure that all personnel who are involved with installation, operation and maintenance of the machine have read the "1 Safety" sections of this manual.

1. Inspect and clean the inside of the unit from foreign objects such as rags, tools, particles of metal, and such, that may pose damage to the inside of the unit.
2. If fitted, ensure that both air balance dampers are fully open and check that the air paths of the duct work are not obstructed in any way.
3. Check that the filters are securely in place.
4. Confirm both motor overload protectors are set to Start/On position.
5. If fitted with condenser or cooler, install a water trap.
6. Confirm thermostat and overheat protection settings are in accordance with table shown "9 Technical data".
7. Confirm the incoming electrical power cable is secure and ensure that live wires are securely located in the correct terminals. Ensure the earth wire is securely located onto the earth strap or earth terminal provided.
8. Check that the rating of the electrical supply fuses is correct, see wiring diagram.

5.2 START-UP TEST AND ADJUSTMENT

1. Close and secure all access doors
2. Switch the main switch to "I" and check the supply voltage is correct.
3. Briefly start the unit and then turn it off. Promptly check if the process fan and regeneration fan is rotating in the correct direction. If incorrect check "7 Troubleshooting". See "6 Operating" on "Start" and "Stop".
4. If fitted, balance the airflows, using the dampers in the duct work or adjust the frequency of each frequency converter to obtain the required values.
5. Check the operation of fault alarms by temporarily reducing the set points of alarm giving thermostats and motor protectors. Do not forget to reset to the original settings according to technical data and electrical diagram.
6. Measure the current on both fans and compare with the electrical specifications printed on the fan motor casing. If the current is too high, reduce the airflow slightly by closing down on the respective balance damper.
7. If connected, check remote control operation.
8. If connected, check remote alarm function (see 5 above).
9. If connected, check humidistat/electronic humidity controller function.

6 OPERATING

6.1 OPERATING PANEL

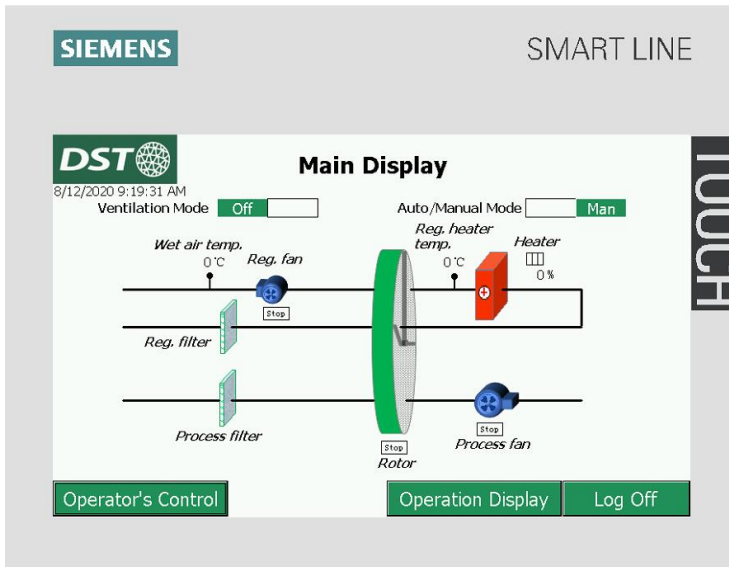
6.1.1 MAIN DISPLAY

Touch panel main display, See display below, It is component layout and the running status of the unit. Reg.heater temperature and wet air temperature displayed in the screen.

There are three buttons [Operator's Control] [Operation Display] [Log Off].

Touch any buttons, the screen will go into corresponding display.

ACCOUNT:user PASSWORD:dstdst

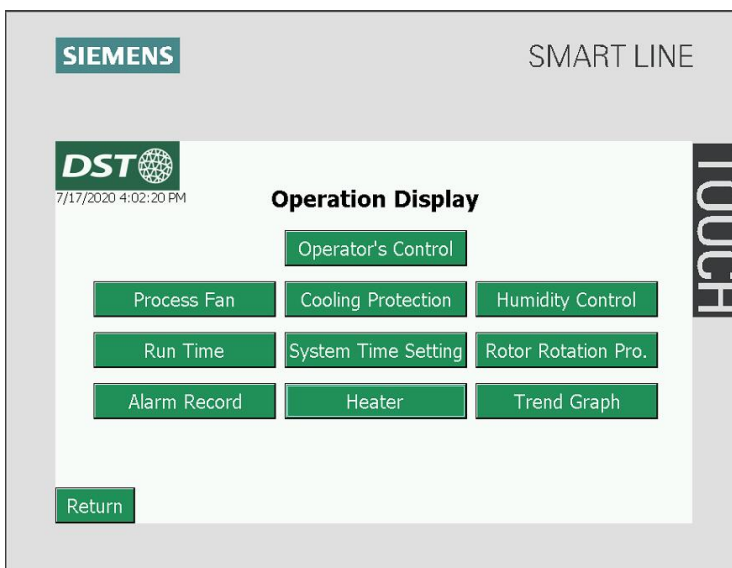


6.1.2 OPERATION DISPLAY

Touch [operation display] button on the main display screen, enter to the below screen.

There are ten main buttons on the screen [operator's control] [Process Fan] [Humidity Control] [Rotor Rotation Pro.] [Cooling Protection] [Run Time] [System Time Setting] [Alarm Record] [Heater] [Trend Graph].

Touch any button enter to below screen. User need a operator code to enter some screens and modify data.

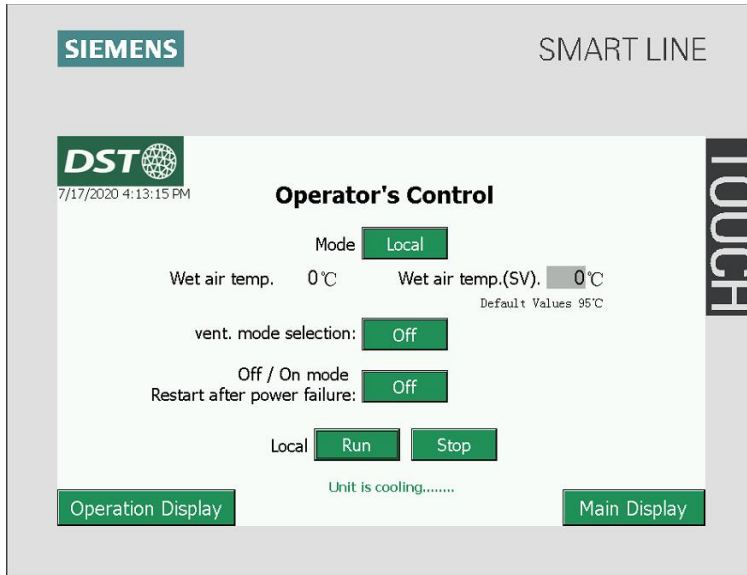


6.1.3 OPERATOR'S CONTROL

Touch the [Operator's control] button on the main display screen,enter to the below screen.

It shows the wet air temperature,wet air overtemp.,vent.Mode selection and restart after power failure etc. .The wet air temp.(SV) can be modify.When the unit in Local mode,the mode selection is Run,the process fan will be work.

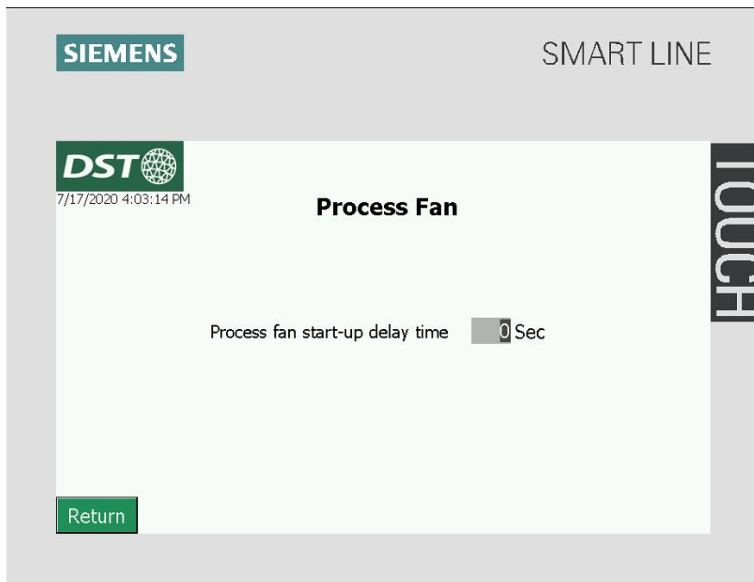
When the power-off protection switch is ON,even if the power is suddenly turned off,the machine will restart when the power is turned on.When the power failure protection switch is OFF,the sudden power failure will cause the machine to fail to start when it is powered on.



6.1.4 PROCESS FAN

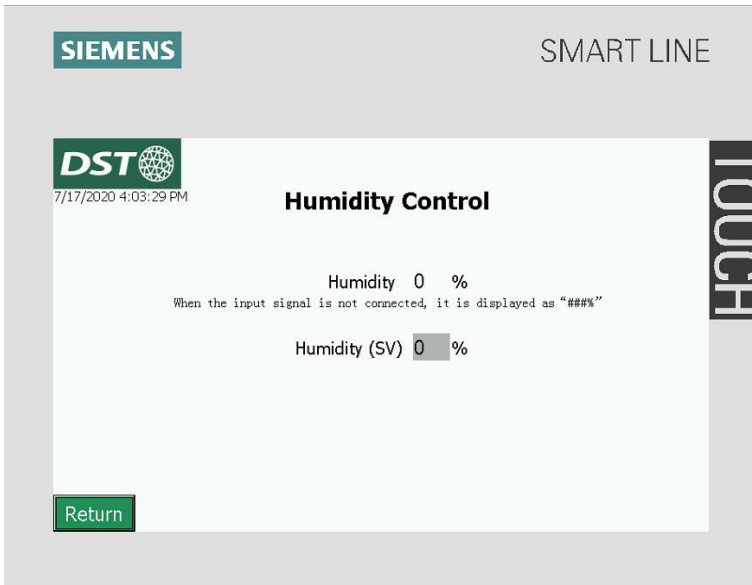
Touch the Process Fan button enter to the below screen.

It shows the process fan start-up delay time. Touch the Return button back to the Operation Display Screen .



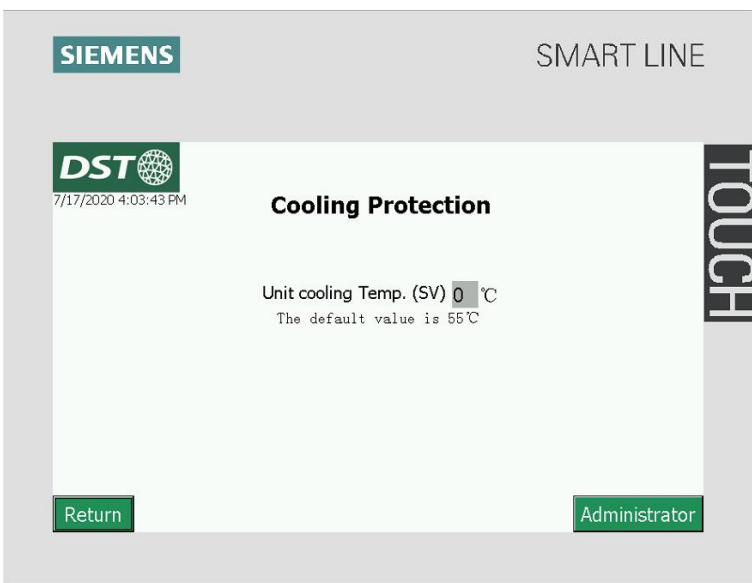
6.1.5 HUMIDITY CONTROL

Touch the Humidity Control button on the Operation Display, enter to the below screen. It shows the humidity and humidity(SV). When the input signal is not connected, it is displayed the humidity. The humidity (SV) can be set. Touch the Return button back to the Operation Display.



6.1.6 COOLING PROTECTION

Touch the Cooling Protection button on the Operation Display, enter to the below screen. It can set value to protect the machine out of damage, when the machine stop, regeneration fan and rotor will continue run, the set value to let the machine's temperature down to the safe value. Touch the Return button back to the Operation Display.

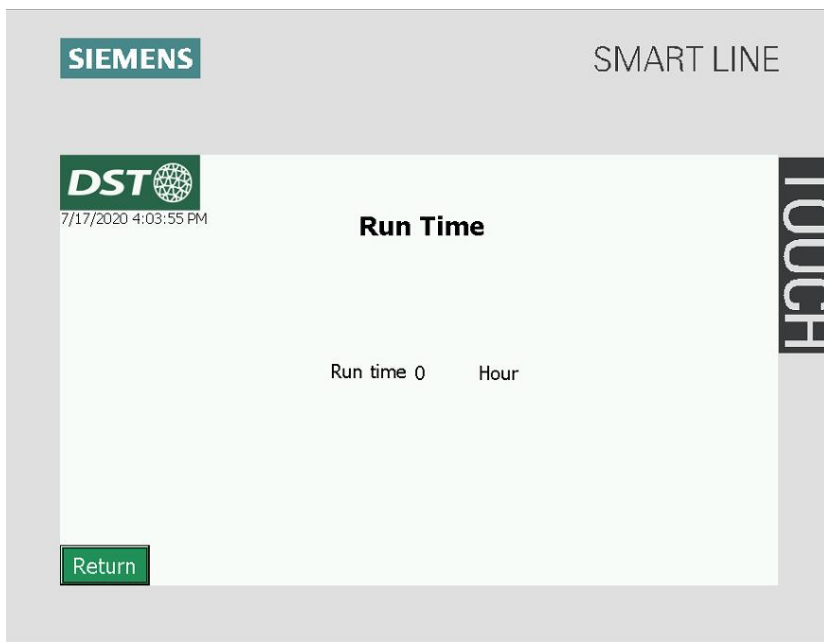


6.1.7 RUN TIME

Touch the Run Time button on the Operation Display screen, enter to the below screen.

It shows the whole hours of the machine have worked.

Touch the Return button back to the Operation Display.

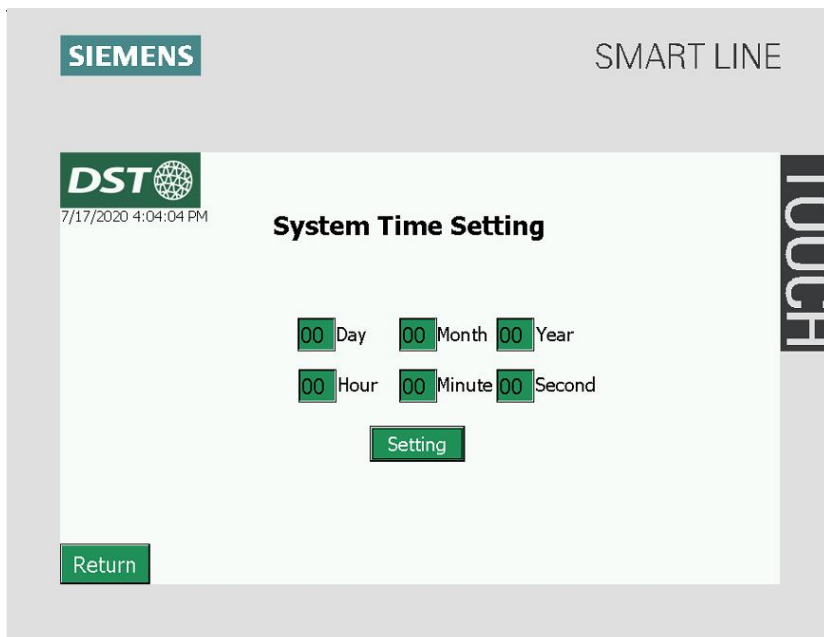


6.1.8 SYSTEM TIME SETTING

Touch the System Time Setting on the Operation Display, enter to the below screen.

It shows the system time.

Touch the Return button back to the Operation Display.

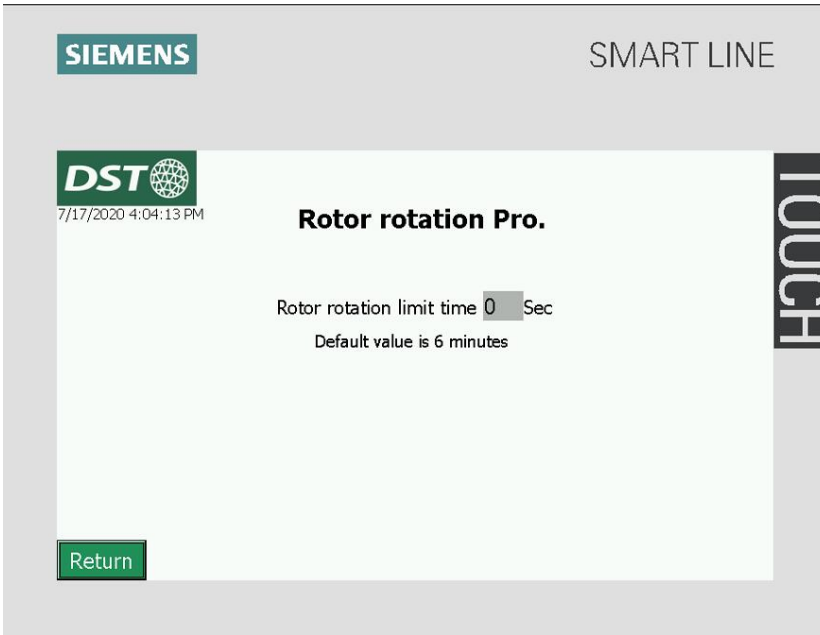


6.1.9 ROTOR ROTATION PRO.

Touch the Rotor rotation Pro.on the Operation Display,enter to the below screen.

It shows the rotor rotation limit time and the default value is 6 minutes.

Touch the Return button back to the Operation Display.



6.1.10 HEATER

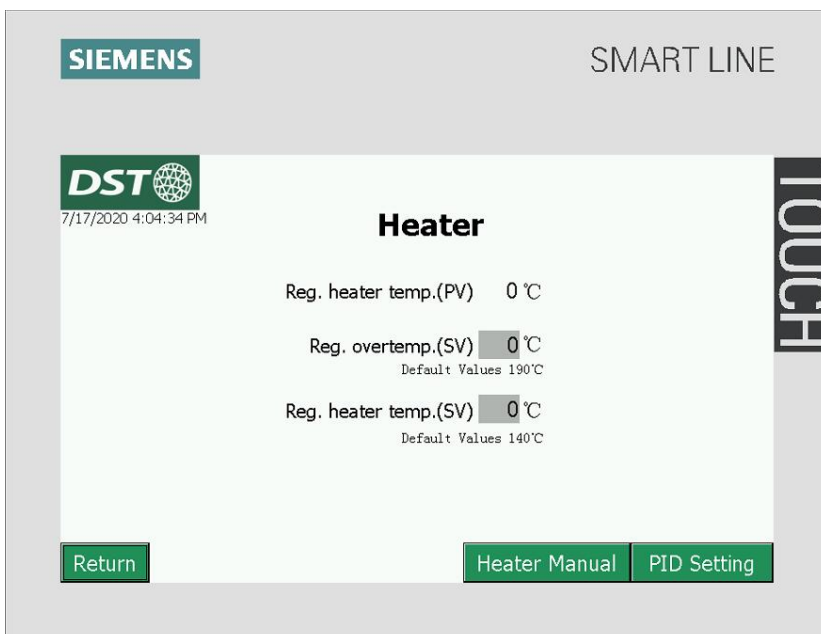
Touch the Heater on the Operation Display,enter to the below screen.

It shows the PV,set value of reg.heater temp and reg.overtemp.Touch the Heater Manual enter to the screen .In the Aut mode,the heaters not work.In the Manual,switch on each electric heaters as required.

Touch the PID Setting,show the Gain,Integral time,Derivative time and Sample time of Reg.heater and Wet air.

It used to set parameters to control the unit.And in general,it has been set before delivery.There is no need to modify.

Touch the Return button back to the Operation Display.



Note: The default values of Reg.heater and Wet air are as follows:

SIEMENS SMART LINE

DST 9/2/2020 1:49:30 PM

PID Regulator

Reg. heater		Wet air	
Gain	-12.0	Gain	+15.0
Integral time	2.0 Min	Integral time	2.0 Min
Derivative time	0.5 Min	Derivative time	0.5 Min
Sample time	2.0 S	Sample time	2.0 S

Heater

TOUCH

6.1.11 TREND GRAPH

Touch the Trend Graph enter to the below screen. It shows the TH2&TH3 Trend Graph in one day or seven days.

Touch the Return button back to the Operation Display.

SIEMENS SMART LINE

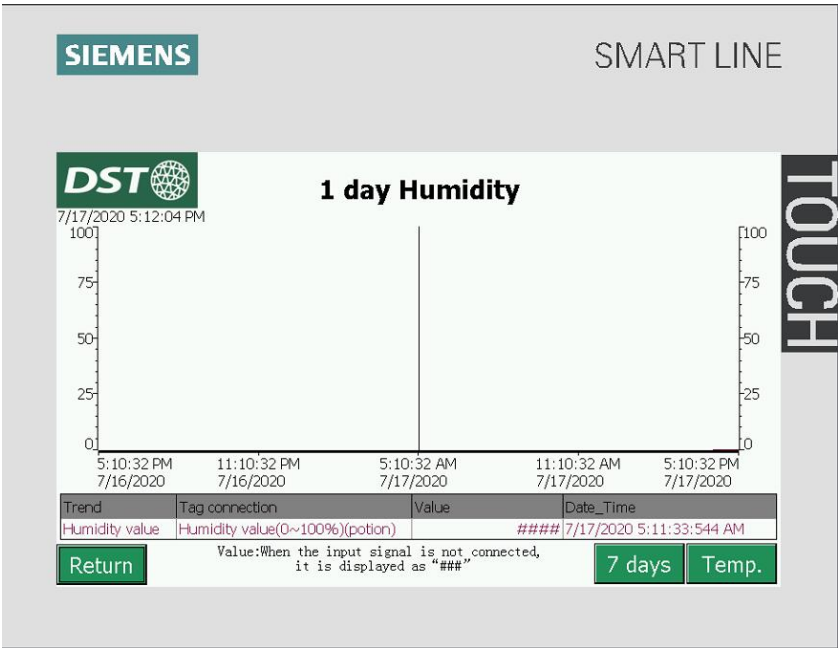
DST 7/17/2020 4:05:10 PM

1 day TH2&TH3 Trend Graph

Trend	Tag connection	Value	Date_Time
Reg. heater temp.	E3 Reg. heater temp. TH2	####	7/17/2020 3:59:33:543 AM
Wet air temp.	E4 Wet air temp. TH3	####	7/17/2020 3:59:33:543 AM

Return 7 days Humidity Save To USB Flash Disk

TOUCH

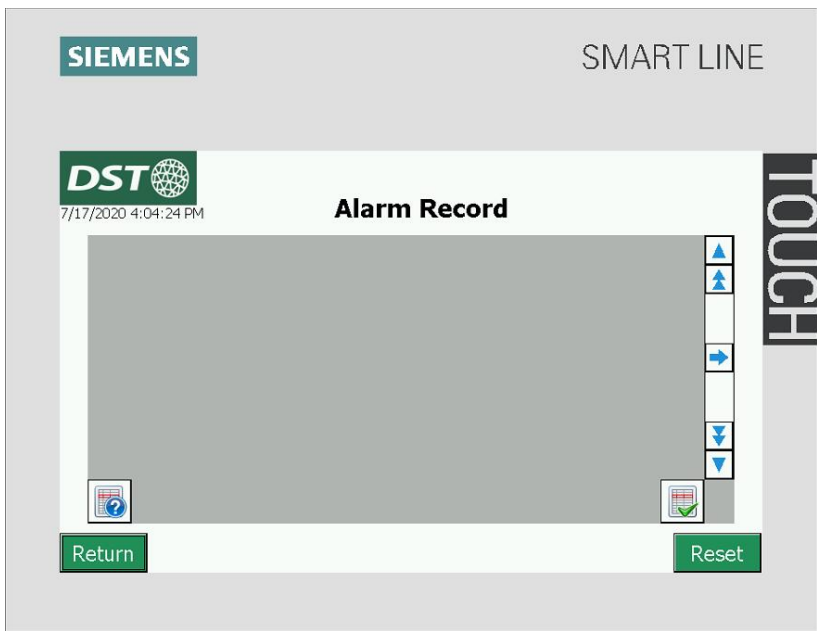


6.1.12 ALARM RECORD DISPLAY

Touch the Alarm Record enter to the below screen.

When the system has alarm, see the message. Check the machine and deal with the alarm. Touch the Reset button, then the alarm was canceled.

Touch the Return button back to the Operation Display.



6.2 START

Main switch is in electrical box. Put main switch to "ON" position.

If want to choose to automatically control the electric heater based on humidity. Rotate the "Auto/Manual" button to Auto; If choose to manually control the electric heater, rotate the button to Manual.

Then select the local mode on the touch screen (the Vent mode is off). Press the local button "Run", the unit starts running. It shows the unit and the rotation of fan on the main screen.

6.3 STOP

Never stop the dehumidifier by cut off power supply.

Press the local "Stop" button, the unit will stop running, and enters the after cooling operation. When the value is lower than the default of 55 degrees, the unit is stopping completely.

During the operation of the unit, the electric heating unloading is accomplished by outputting a percentage of the set regeneration temperature value and the actual displayed regeneration temperature value.

The above running process is common in remote mode.

The ventilation mode is "ON", then the unit can not be operated in remote or local mode, only the ventilation mode state.

6.4 Control and protection equipment

1. Motor protectors: Alarms for over-current or missing phase on three-phase motors.
2. Rotor rotation: If the rotor takes more than 6 minutes to run a complete turn, the alarm will be given.
3. Filter guards: If the differential pressure increases beyond the recommended value, the filter needs to be replaced as soon as possible. See "8 Technical data" for recommended pressure.
4. Run time meter: Run time meter measures time that the dehumidifier has been in operation.

7 TROUBLESHOOTING

7.1 PLC ERROR CODES

The dehumidifier will automatically shut down if an error is detected. During shut down, a timed cooling down period on the regeneration fan is initiated before turned off. See below for error codes.

CODE	EXPLANATION	CAUSE	SOLUTION
Fuse F1 or F2 alt. Motorst Q1 or Q2	Process fan overload Regeneration fan overload	Excessive airflow Short-circuit or fan malfunction	Check fan Check setpoint of Q1/F1 or F2/Q2 Reset F1/Q1 or F2/Q2 – check and adjust airflow Have a qualified electrical technician to investigate
Fuse F3-5 or TH1 Note: Not applicable when fitted with steam	Regeneration air thermostat TH1 has tripped Regeneration heater overload	TH1 setting incorrect TH1 defective (fail safe) Incorrect shut down Insufficient regeneration airflow Excessive regeneration heater power Regeneration heater malfunction	Check TH1 setting Check correct operation of TH1 Reset TH1 - reset F3 - F5 Check regeneration airflow and fan operation Check TH2 setting Check and replace heater
F40	Overload in the transformer	Short-circuit or transformer malfunction	Check transformer
Frost guard GT81	Freeze protection has tripped and stopped the machine	Temperature on the hot water outlet or condensate outlet is below 7°C	Check water supply and insulation for potential thermal loss
Wet air temp TH3	Wet air thermostat tripped (TH3)	TH3 setting incorrect Excessive regeneration airflow Excessive regeneration heater power Incorrect or intermittent rotor rotation Insufficient system moisture load	Check TH3 setting Check and adjust regeneration airflow Check TH2 setting Check rotor drive system Check process airflow and fan operation Check process inlet moisture content Check RH controller set point/output control signal Reset TH3
Rotor stopped	Rotation guard sensor has not detected movement	Rotor drive system failure Sensor failure or incorrect clearance	Check drive motor & transmission (correct belt tension) Check clearance gap between sensor and rotor marker
Fr. converter U1-U2	Frequency converter alarm	Frequency converter internal alarm activated – fault code shown	Refer to converter manual for fault code explanation
Emergency stop	Operation terminated	Emergency button activated	Pull the emergency button to restore

FIGURE 13: PLC alarm table solutions

7.2 GENERAL TROUBLESHOOTING

Check for following if the unit will not start-up.

PROBLEM	CAUSE	SOLUTION
Unit will not start. PLC is displaying nothing	No power to unit No power to control circuit	Confirm electric supply and check local isolator is on Check remote control is set to 'On/Run' position Check all circuit breakers are set to 'Start/On' position Have a qualified electrical technician to investigate
The PLC is displaying an error, but the unit will not start	Alarm circuit is preventing start-up	Check TH1 & TH3 thermostats are set Check all circuit breakers are set to 'Start/On' position Check fan motor overloads are set to 'Start/On' position Check error on PLC - Restore error and reset PLC
The PLC is displaying a message. but the dehumidifier does not appear to be operating	The measured value is below the control set point Remote stop/start is disabled	Operation can be checked by lowering control set point or switching to 'manual' operation Check remote control is set to 'On/Run' position and if the cable is undamaged. Check error on PLC - Restore error and reset PLC
The RUN-light is on, but no regeneration airflow is detected. Note: Applicable for DC-50 only.	The flow guard has detected no airflow movement and deactivated the regeneration heater.	Remove blockages or open dampers on the regeneration airflow. Check regeneration fan.

FIGURE 14: General troubleshooting table and solution

7.3 CAPACITY TROUBLESHOOTING

The dehumidifier performance can be roughly checked by feeling the temperature of the uninsulated duct work near the unit.

PROBLEM	OBSERVATION	SOLUTION
The dehumidifier does not maintain required condition or achieve expected performance, despite being operated at full power	Dry air outlet duct is warm and wet air outlet duct is very warm (normal operation)	<ul style="list-style-type: none"> Check actual moisture load against calculated design moisture load Check controller set point/output signal Check airflows are set as specified, adjust as necessary Check air filters Check dehumidifier casing and duct work for air leakage Check rotor alignment and condition of radial and peripheral rotor seals
	Both outlet air ducts are cold (no alarm)	<ul style="list-style-type: none"> Check regeneration airflow and fan operation Check regeneration heater operation Check controller set point/output signal Check TH2 setting
	Dry air outlet duct is cold, wet air outlet duct is hot (no alarm)	<ul style="list-style-type: none"> Check rotor rotation Check process airflow and fan operation
Measured airflows are lower than specified	Fan is not rotating in direction indicated by arrow on fan motor casing. The incoming phase supply is incorrect	<ul style="list-style-type: none"> Isolate mains electrical power supply to the unit Change over two of the three incoming phase supply wires. Re-check fan rotation

FIGURE 15: Capacity troubleshooting and solution table

8 MAINTENANCE

8.1 REGULAR INSPECTION INTERVAL

It is recommended that the machine should go through a basic inspection on a regular basis during start-up, stopping or per operation round.

1. Check for physical damages and foreign objects by inspecting the dehumidifier internally and externally.
2. Check filter and change if necessary.
3. Check the rotor drive system during operation
4. Check on all moving components, fans especially, for unnatural noises.
5. Check the regeneration heater for heating, and if fitted, coolers for cooling.
6. Check for any air infiltration through panels or worn-out sealings.
7. Check electrical equipment is in order, i.e electrical cabinet or panels are locked and secured or loose components. This can only be performed by a certified electrician.
8. Water trap is working as well as the drip pan is transporting the condensate into the drain (if fitted with condenser or cooler).

8.2 REGULAR SERVICE INTERVAL

Depending on the application or the industry, an assessment from a service engineering should determine if the interval of the service should increase or decrease.

Service time	Run time in hours in 1 000	0	4'	8'	12'	16'	20'	24'	28'	32'	36'	40'	44'	48'
	Calendar time in months	0	6	12	18	24	30	36	42	48	54	60	66	72
Unit														
Inspect and change filter if necessary		X	X	X	X	X	X	X	X	X	X	X	X	X
Clean and inspect the unit				X	X	X	X	X	X	X	X	X	X	X
Inspect fan, fan wheel, casing, motor and bearings, renew if necessary				X	X	X	X	X	X	X	X	X	X	X
Inspect features and functionality		X		X	X	X	X	X	X	X	X	X	X	X
Inspect electric and control system, cables, electrical components and functionality				X	X	X	X	X	X	X	X	X	X	X
Inspect access panels, locks and seals				X	X	X	X	X	X	X	X	X	X	X
Inspect duct and duct connections		X			X	X	X	X	X	X	X	X	X	X
Inspect heater and cooler				X	X	X	X	X	X	X	X	X	X	X
Inspect and/or renew humidistat/humidity sensor if necessary				X	X	X	X	X	X	X	X	X	X	X
Inspect rotor motor and/or renew if necessary				X	X	X	X	X	X	X	X	X	X	X
Inspect and/or renew seals on removable panels if necessary				X	X	X	X	X	X	X	X	X	X	X
Inspect and/or renew peripheral seals if necessary				X	X	X	X	X	X	X	X	X	X	X
Inspect rotor seals and/or renew if necessary				X	X	X	X	X	X	X	X	X	X	X
Inspect and/or renew drive chain in the rotor drive system if necessary				X	X	X	X	X	X	X	X	X	X	X
Inspect rotor		X		X	X	X	X	X	X	X	X	X	X	X

Safety feature check														
Inspect overheat protection				X	X	X	X	X	X	X	X	X	X	X
Renew and inspect the freeze protection device if necessary		X		X	X	X	X	X	X	X	X	X	X	X
Inspect rotation guard and/or renew if necessary		X		X	X	X	X	X	X	X	X	X	X	X
Inspect damper, actuator and valves		X		X	X	X	X	X	X	X	X	X	X	X
Inspect post-cooling function		X		X	X	X	X	X	X	X	X	X	X	X

FIGURE 16: Service chart

This is a general service chart and the time to service and to replace a part may vary depending on the operating condition. Some options listed here may not be installed or available for this specific unit.

Danger!

The operator of the system has to ensure that all personnel who are involved with installation, operation and maintenance of the machine have read the "Safety" sections of this manual.

8.3 WASHING THE ROTOR

The rotor contained in DST dehumidifiers has a distinct advantage over other types of desiccant rotors in that dust can be washed out of the material without any need for reimpregnation after the treatment.

Washing the rotor is not a maintenance process but a method to restore the rotor's adsorption ability. This should only be carried out as last resort and in an extreme case if other attempt to restore the adsorption ability is futile.

Caution!

Please contact a DST-representative before attempting to wash the rotor!

9 TECHNICAL DATA

RLZA-82R

Capacity	
Capacity [kg/h] 1)	25
Nominal dry air flow [m ³ /h] 2)	3500
External static pressure dry air [Pa] 2)	300
Nominal wet air flow [m ³ /h] 2)	1000
External static pressure wet air [Pa] 2)	200
Regeneration heater - Electric	
Heater power [kW]	30
Number of electric heater steps	7
Heating power in steps [kW]	1/7 - 4 2/7 - 9 3/7 - 13 4/7 - 17 5/7 - 21 6/7 - 26 7/7 - 30
Heating power with linear control [kW] 4)	0-30
Total power - Electrical	
Total motor power [kW]	2.3
Total power [kW]	32.3
Other electrical information	
Supply fuse 3x400V/50Hz [A]	80
Electric compartment protection class	IP54
Humidistat connection	24VDC
Humidistat supply current [A] 5)	< 1
Temperature setpoint settings	
Overheat protection TH1 [C]	200
Thermostat TH2 [C]	190
Overheat protection TH3 [C]	95
Other technical data	
Air filter class (regeneration/process)	G4/G4
Filter change at pressure (G4/F7) [Pa]	200/250
Noise level [dB(A)] 3)	-
Regeneration air fan delay [min]	15
Weight [kg]	465

1) Valid for inlet conditions 20°C/60%RH (equal 1.2 kg/m³).

2) If no data is stated here the volume flow above is given at free blowing airflow.

3) Unit connected to uninsulated ducts. Nominal airflows.

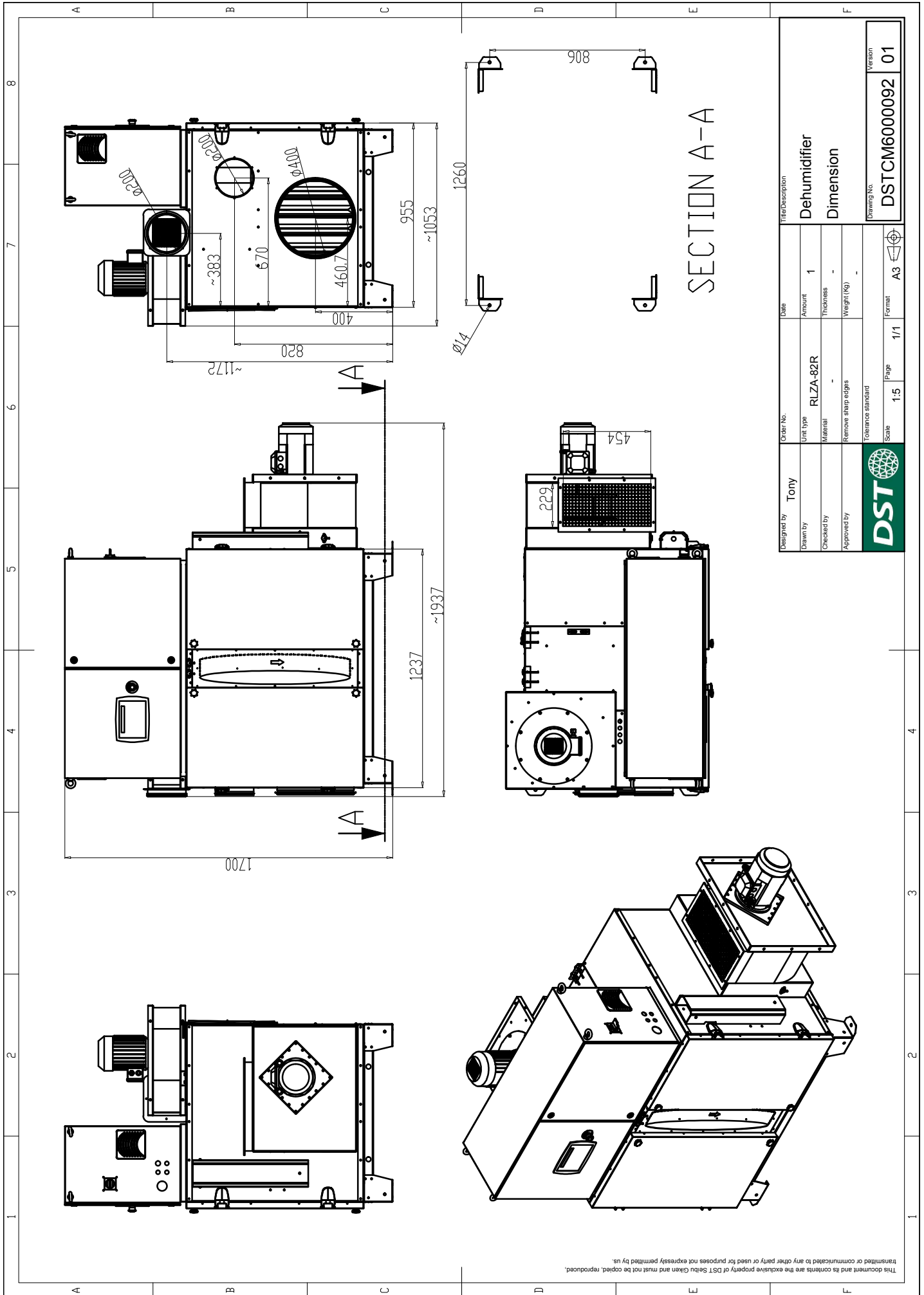
4) Applies for dehumidifiers with installed optional feature.

5) The current provided by the humidistat connection. Only use humidistats that are capable of this load current.

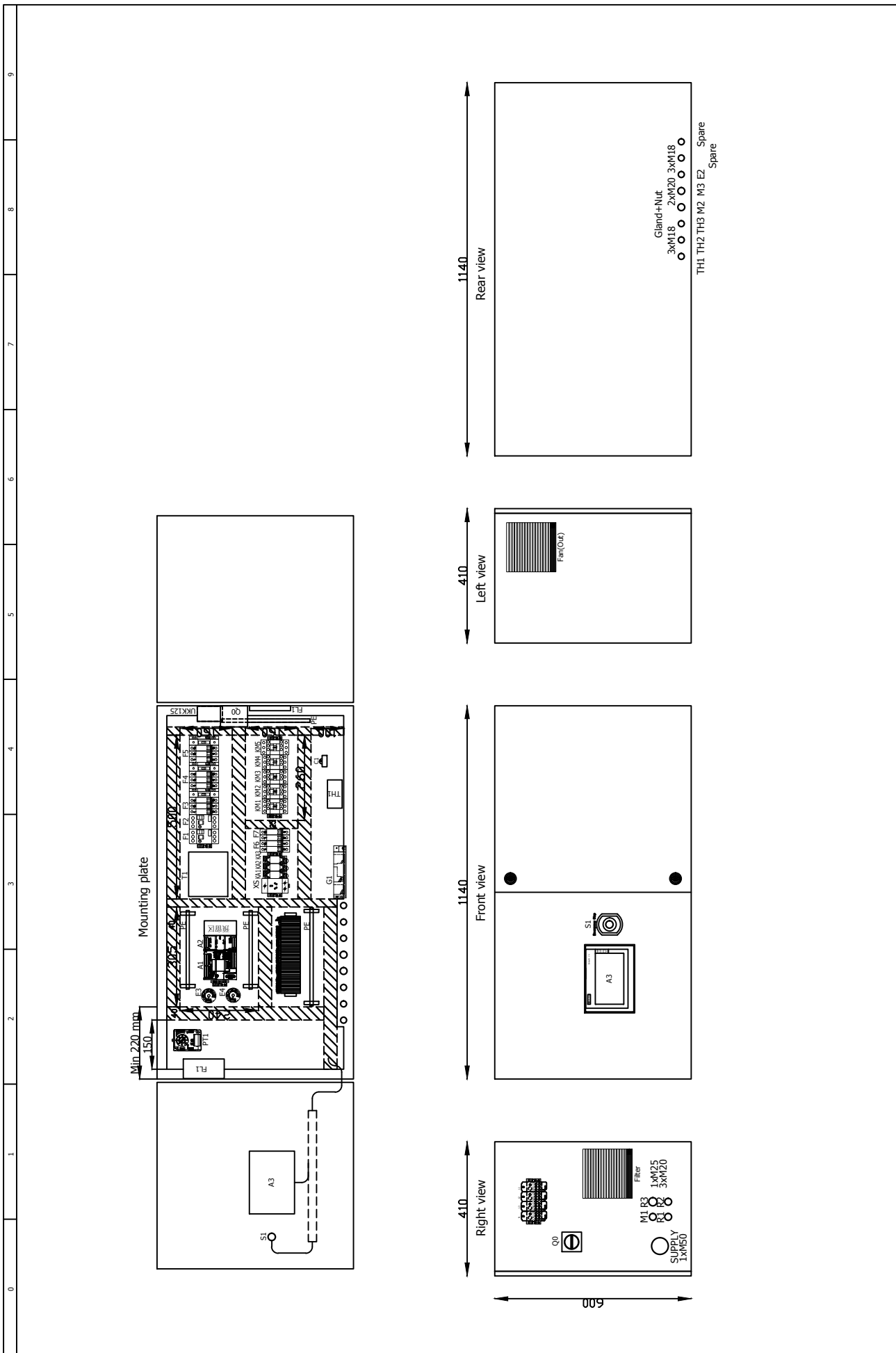
The content of in this document may be subject to change without prior notice.

Component List RLZA-82R

Material code	Description	Antal	Type	Anm
		Qty		Notes
1110600117	Process fan	1	BAS315W80-RF-LG90-1.5KW-2P-B5	
1110500086	Motor	1	W21-1.5KW-2P-90S-B5T-IE2-220/380V	
1110600087	Reg. fan	1	BNS280-RF-RD90-0.75KW-2P-B5	
1110500042	Motor	1	W21-0.75KW-2P-80-B5T-IE2-220/380V	
1112000237	VD rubber shock absorber screw	4	M8*23=D30*H30	
1110300004	Rotor	1	DMR-770H20	
1111100007	Timing pulley	1	20*T10*22BF	
1110900001	synchronous belt	1	15T10-2800	
1110500028	Motor + gearbox	1	A8M25D+G860K+G8XH10 25W 1: 600	
1111900073	High temperature resistant mica board	2	910*331*10mm	
1111300059	Electric heating tube	42	DJRG- ϕ 8-0.714-420	
1110700075	filter	1	592*317*360-6P	G4 Bag filter
1110700076	filter	1	892*495*360-9P	G4 Bag filter
1111600014	Two-piece clamp	2	ϕ 38-40	
1110900007	synchronous belt	0.08	T10-50	
1111200015	Tensioner assembly	1	ϕ 30*52.5	
1111000004	Tensioner	1	RE10	
1111600013	Hoop	2	ϕ 800	



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This document and its contents are the exclusive property of DST Seibu Giken and must not be copied, reproduced, transmitted or communicated to any other party or used for purposes not expressly permitted by us.										Unit type		RLZA-82R		Page description Layout Manufactured on 2020-05-27		Designer Julie Order number Standard machine		Check Drawing number DSTCEB000124		Approval Version 00		Page 1/12	



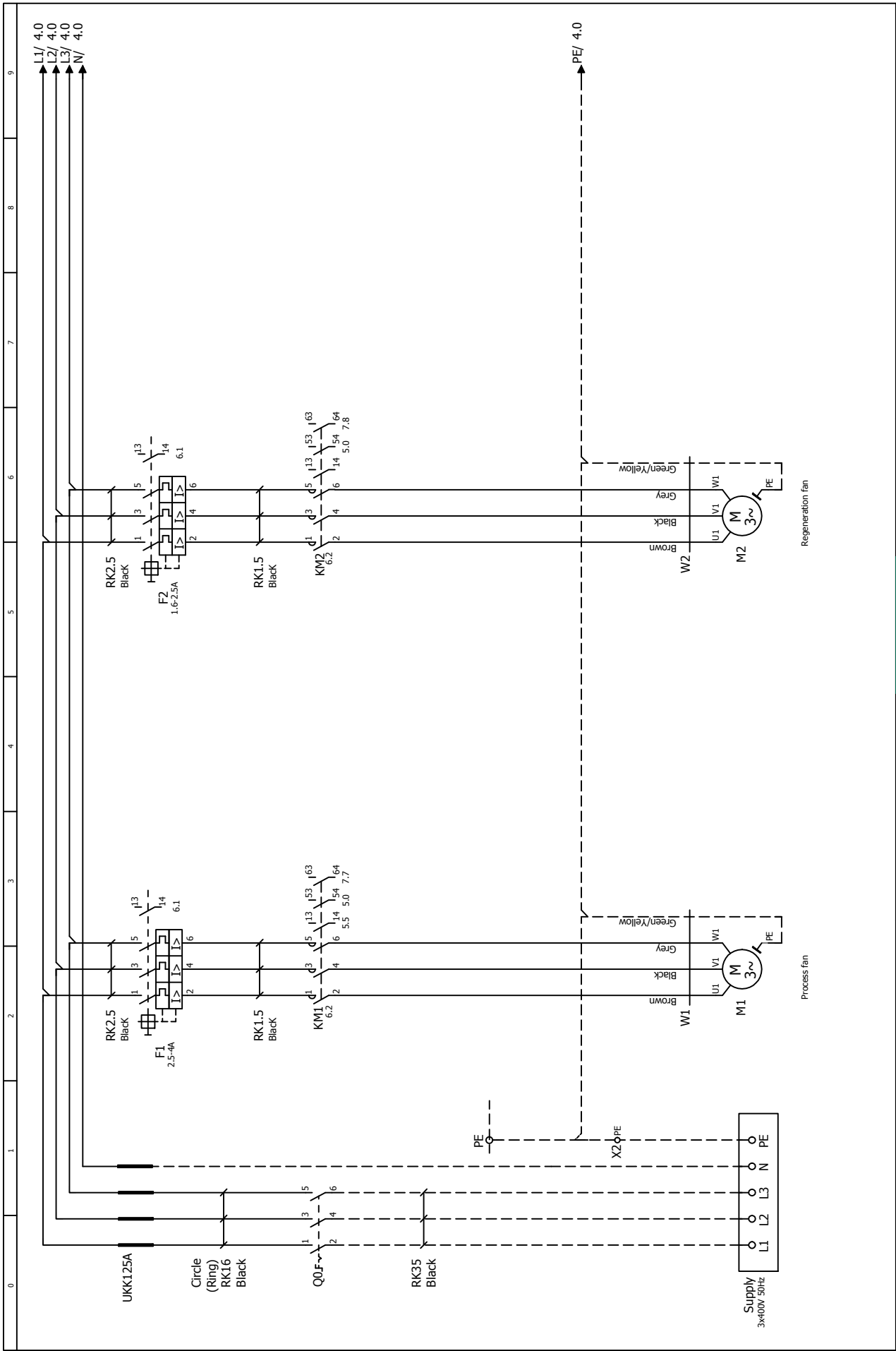
0	1	2	3	4	5	6	7	8	9									
Model	Supply 50/60Hz	Max fuse A	In A	Icu kA	Proc.fan kW	Proc.fan A	Reg.fan kW	Reg.fan A	Heater 1 kW	Heater 1 A	Heater 2 kW	Heater 2 A	Heater 3 kW	Heater 3 A	Heater kW	Heater A		
RLZ-82R	400V	80	51	10	1.5	3.18	0.75	1.58	4,284	6.2	8,568	12,4	17,136	24.8	30	43.3		

Denom.	Gland	Cable	Length outside from flange	Scale
M1 Proc.fan	M20	W1 - 4G1,5	2150	
M2 Reg.fan	M20	W2 - 4G1,5	750	
M3 Rotor	M20	W7 - 4G1,5	2200	
R1 Heater1	M20	W3 - AGRP 4G1,5 W3 - AGRP 1G2,5	4*1900	No
R2 Heater 2	M20	W4 - AGRP 4G2,5 W4 - AGRP 1G2,5	4*1900	No
R3 Heater 3	M25	W5 - AGRP 4G10 W3 - AGRP 1G6	4*1900	No

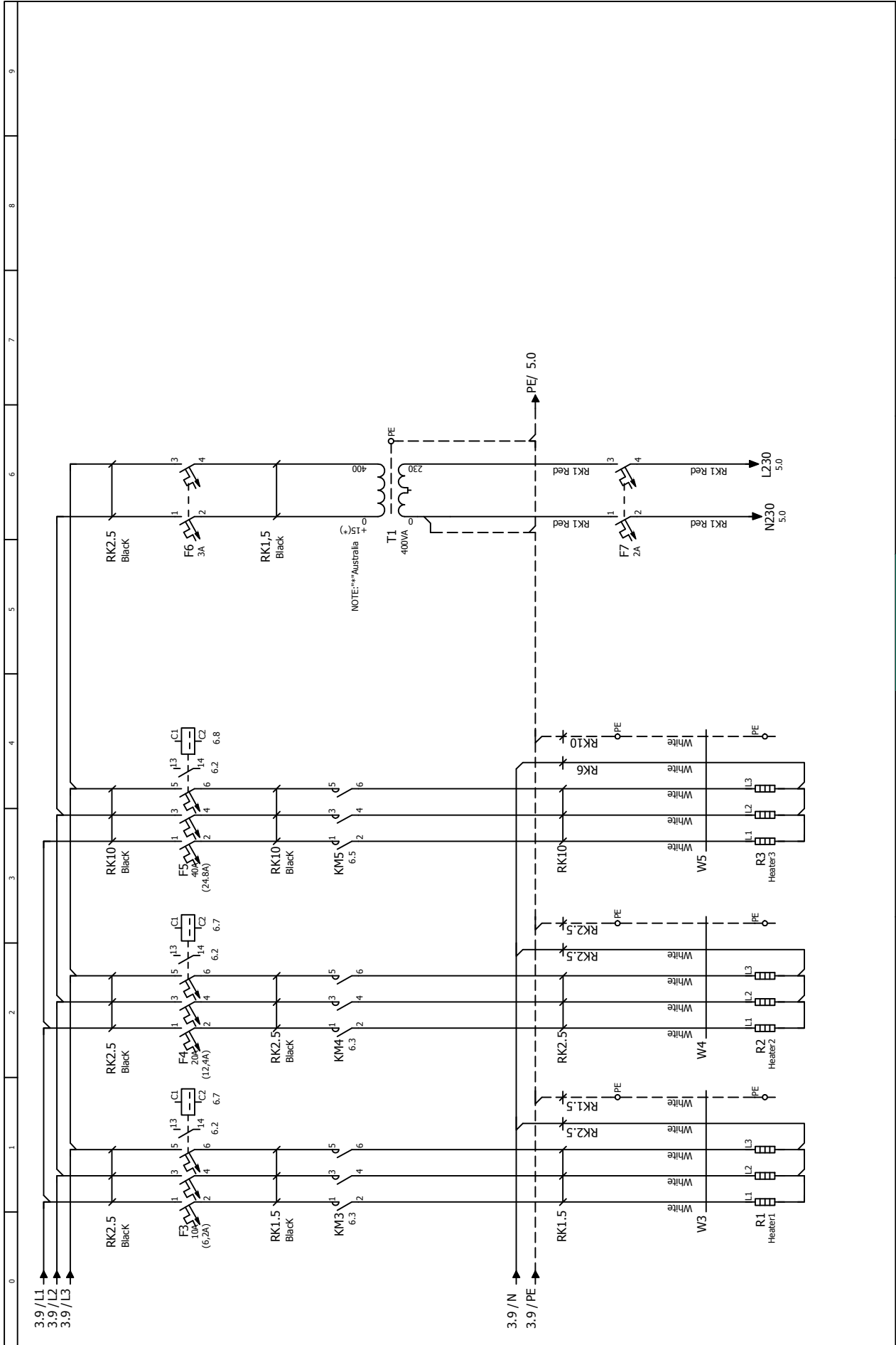
Short circuit interrupting capacity of the machine: Icu is acc. to EN60947.2
 IP54
 Max temp. Tamb=40C

		Page description Datesheet Manufactured on 2020-05-27	Designer Julie Order number Standard machine	Check Drawing number DSTCEB000124	Approval Version 00	Page 2/12
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<p>Unit type RLZA-82R</p>										<p>Page description Main circuit Manufactured on 2020-05-27</p>					<p>Designer Julie Order number Standard machine</p>		<p>Check Drawing number DSTCEB000124</p>		<p>Approval Version 00</p>	
<p>Page 3/12</p>																				

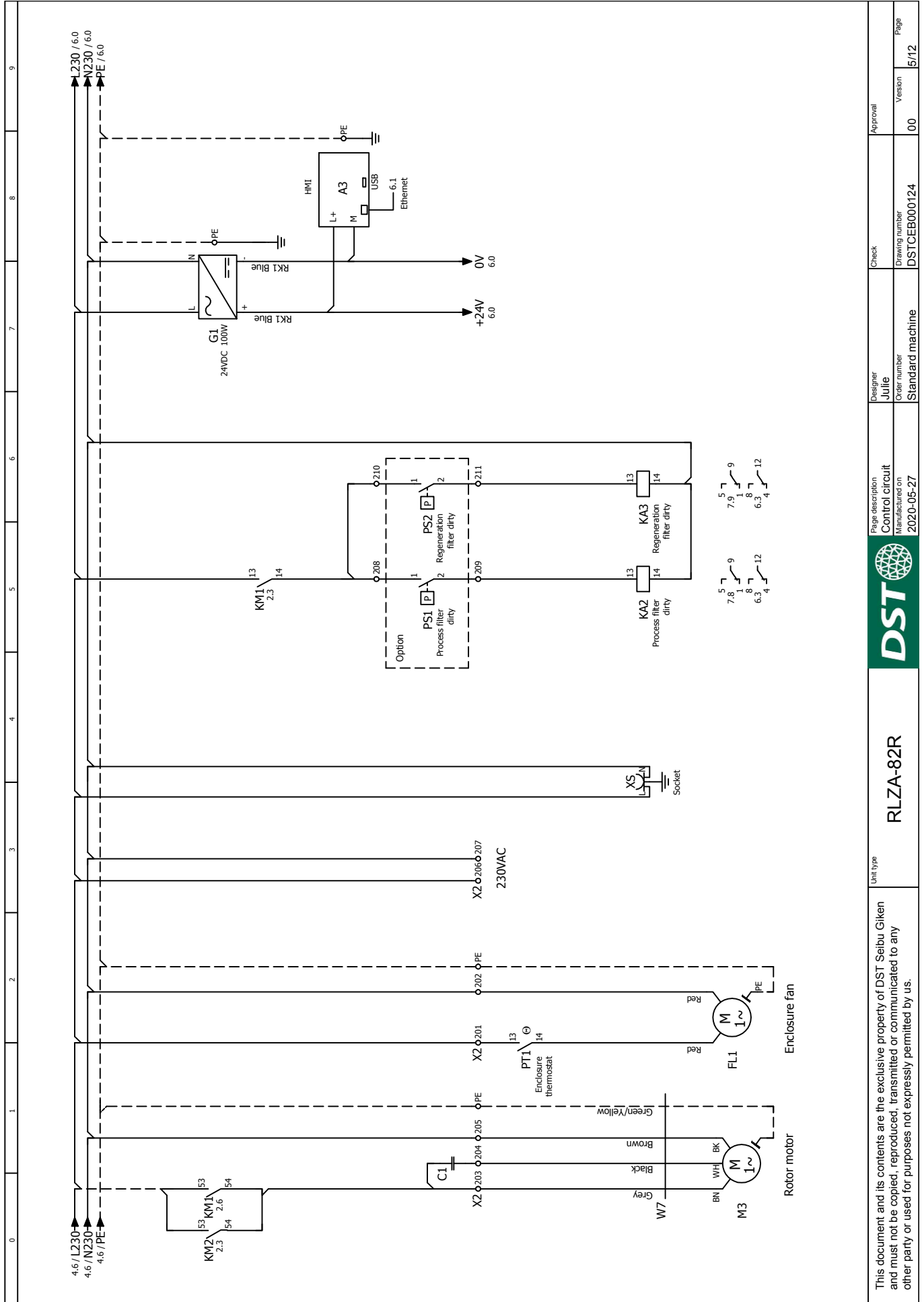


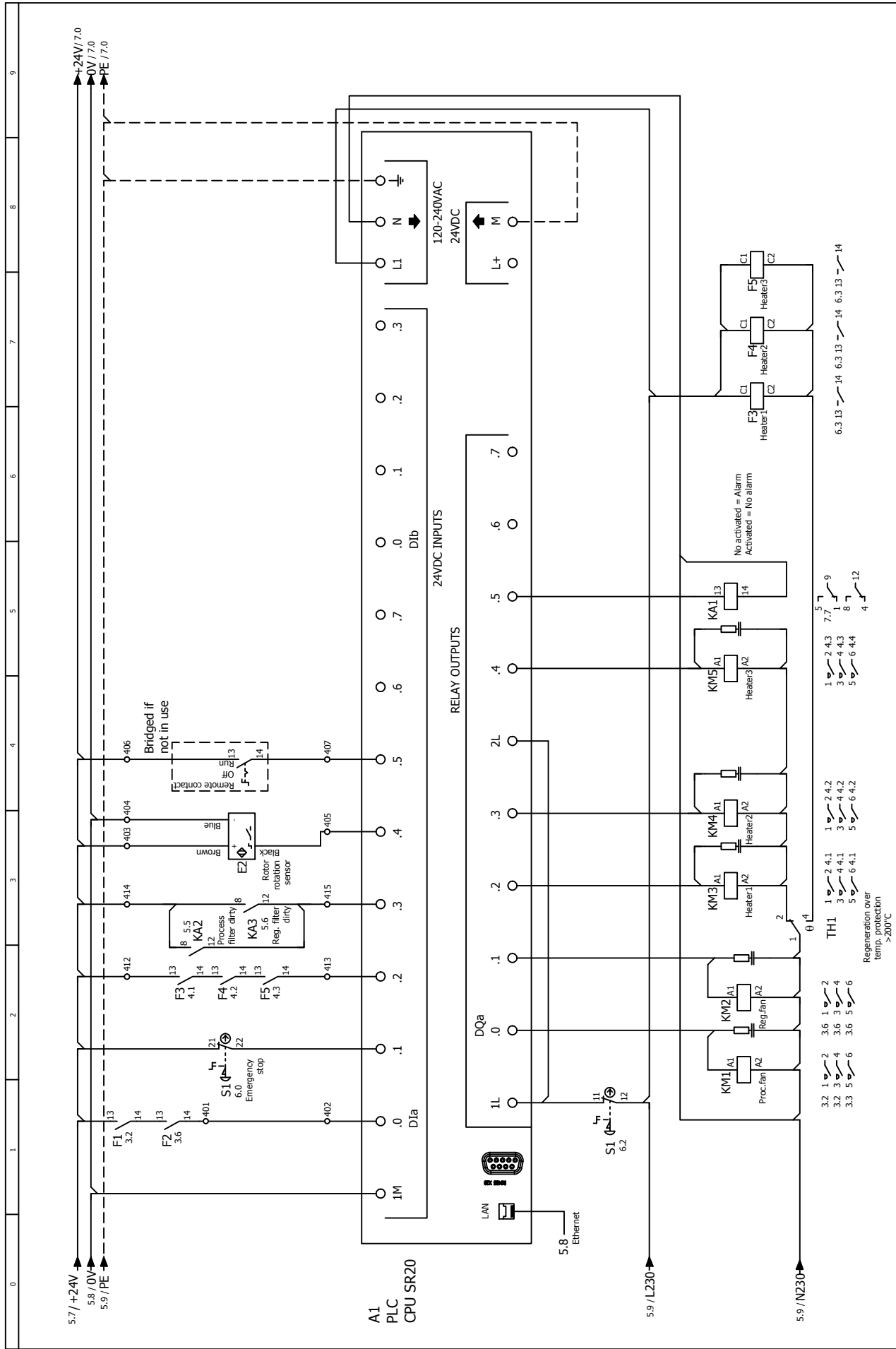
Page description Main circuit Manufactured on 2020-05-27	Designer Julie Order number Standard machine	Check Drawing number DSTCEB000124	Approval Version 00	Page 4/12
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RLZA-82R
 Unit type

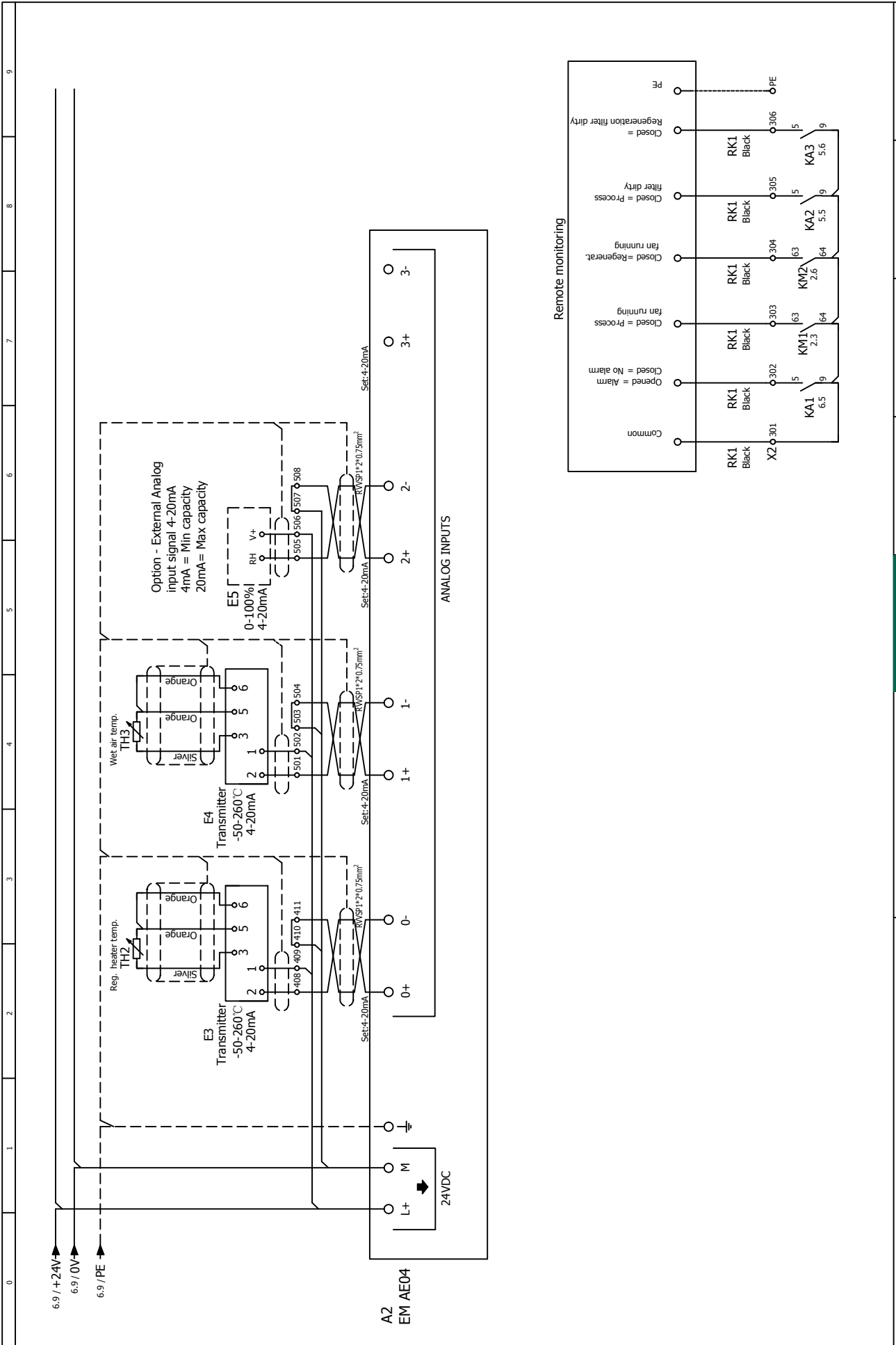
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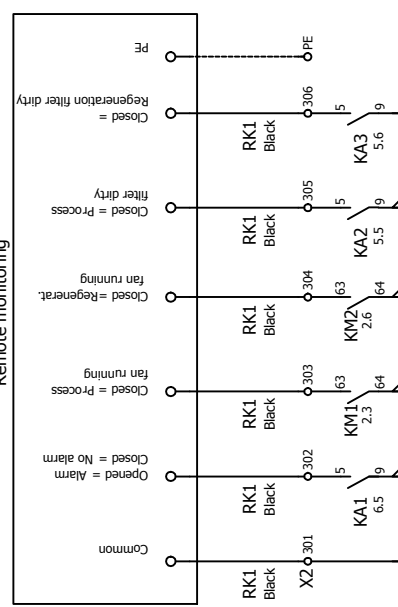


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RLZA-82R									
<p>Unit type Regeneration over temp. protection >200°C</p>									
<p>Page description Control circuit Manufactured on 2020-05-27</p>									
<p>Designer Julie</p>									
<p>Check Drawing number DSTCEB000124</p>									
<p>Approval Version 00</p>									
<p>Page 6/12</p>									





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Unit type			RILZA-82R			Approval			Page
Page description			Control circuit			Designer			Version
Manufactured on			2020-05-27			Order number			00
Drawing number			DSTCEB000124			Drawing number			7/12
Standard machine						Drawing number			00



Pos	Component	Manufacturer	Model Number	Electrical	Quantity	Page
A1	CPU SR20	Siemens	6ES7 288-1SR20-0AA0		1	6
A2	Analog input module	Siemens	6ES7 288-3AE04-0AA0		1	7
A3	HMI	Siemens	6AV6 648-0CC11-3AX0	SMART 700 IE V3	1	5
	Cable		Ethernet cable five-metre		1	5,6
	USB 16G	Kingston	DTDUO3/16GB		1	5
E2	Rotor rotation sensor	Omron	E2E-X5F1 2M		1	6
E3	Transmitter	Jumo	707031/990-001-005(-50 °C TO 260 °C)	4-20mA	1	7
E4	Transmitter	Jumo	707031/990-001-005(-50 °C TO 260 °C)	4-20mA	1	7
E5 (option)	Temperature and humidity sensor	E+E	EE160-HT6xxPBB/Tx024M		(1)	7
F1	Auxiliary contact	Schneider	GVAE1	N/O OR N/C	1	6
	Circuit breaker	Schneider	GV2ME08C	2.5-4A	1	3
F2	Auxiliary contact	Schneider	GVAE1	N/O OR N/C	1	6
	Circuit breaker	Schneider	GV2ME07C	1.6-2.5A	1	3
F3	Circuit breaker	Siemens	5SY63107CC	5SY6 C10 3P	1	4
	Auxiliary contact	Siemens	5ST3 011-0CC	2NO	1	6
	Shunt release	Siemens	5ST3 030	AC 110~415V	1	6
F4	Circuit breaker	Siemens	5SY63207CC	5SY6 C20 3P	1	4
	Auxiliary contact	Siemens	5ST3 011-0CC	2NO	1	6
	Shunt release	Siemens	5ST3 030	AC 110~415V	1	6
F5	Circuit breaker	Siemens	5SY63407CC	5SY6 C40 3P	1	4
	Auxiliary contact	Siemens	5ST3 011-0CC	2NO	1	6
	Shunt release	Siemens	5ST3 030	AC 110~415V	1	6
F6	Circuit breaker	Siemens	5SY62038CC	5SY6 D3 2P	1	4
F7	Circuit breaker	Siemens	5SY62028CC	5SY6 D2 2P	1	4
G1	Power supply	Omron	S8FS-C10024	220VAC/24VDC 100W	1	5
KA1	Relay	Schneider	MY2N-CR-GS	AC220/240V	1	6
	Socket	Schneider	PYFZ-08-E		1	6
KA2, KA3	Relay	Schneider	MY2N-CR-GS	AC220/240V	2	5
	Socket	Schneider	PYFZ-08-E		2	5
KM1-KM2	RC-Unit	Schneider	LAD4RCU	110-240VAC	2	3
	Contact	Schneider	LC1D09M7C	4kW 9A	2	3
	Auxiliary contact	Schneider	LADN20C	2NO	2	3

Device list

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Unit type
RLZA-82R



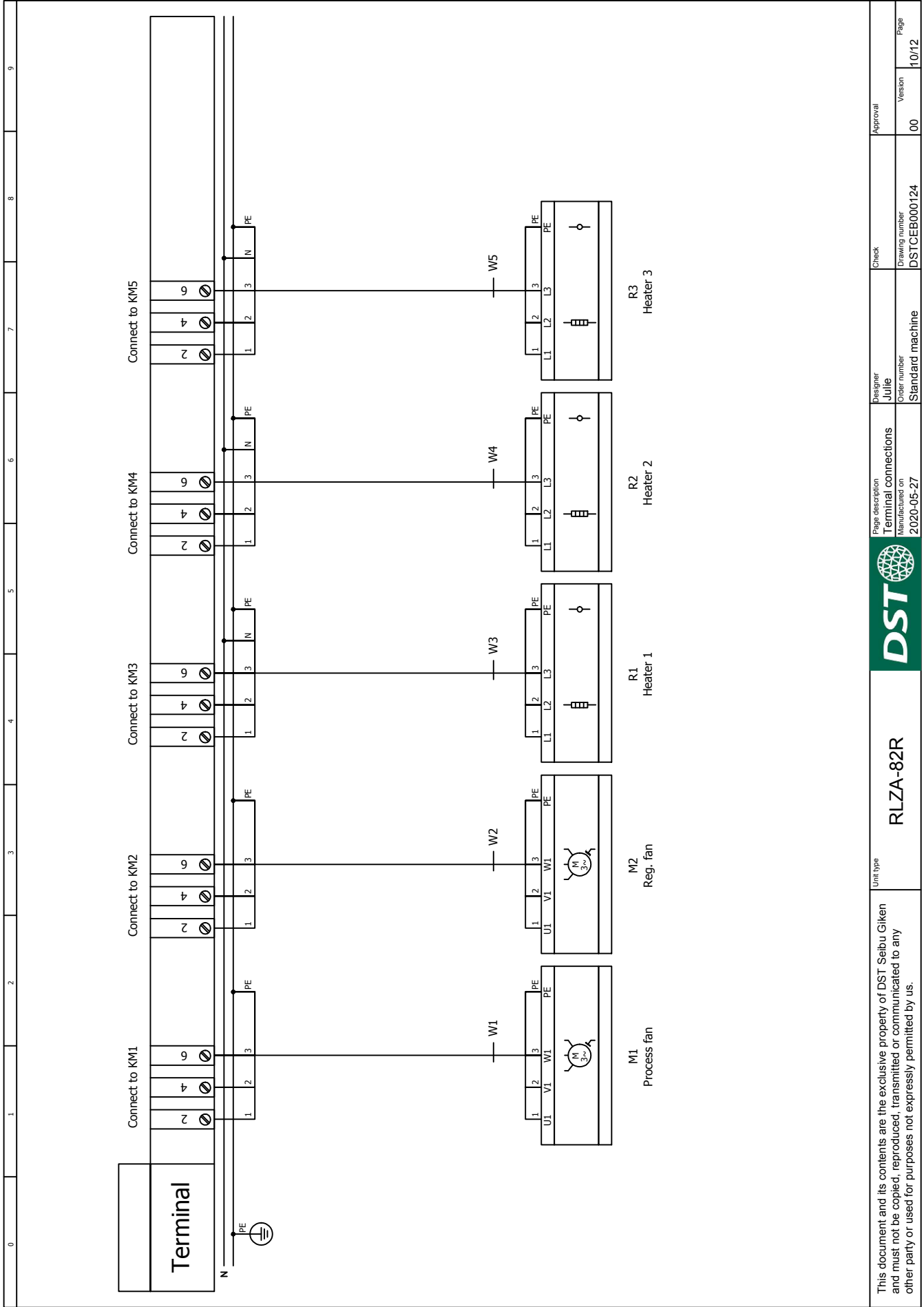
Page description
Device list
Order number
Manufactured on
2020-05-27

Designer
Jufie
Order number
Standard machine

Check
Drawing number
DSTCEB000124

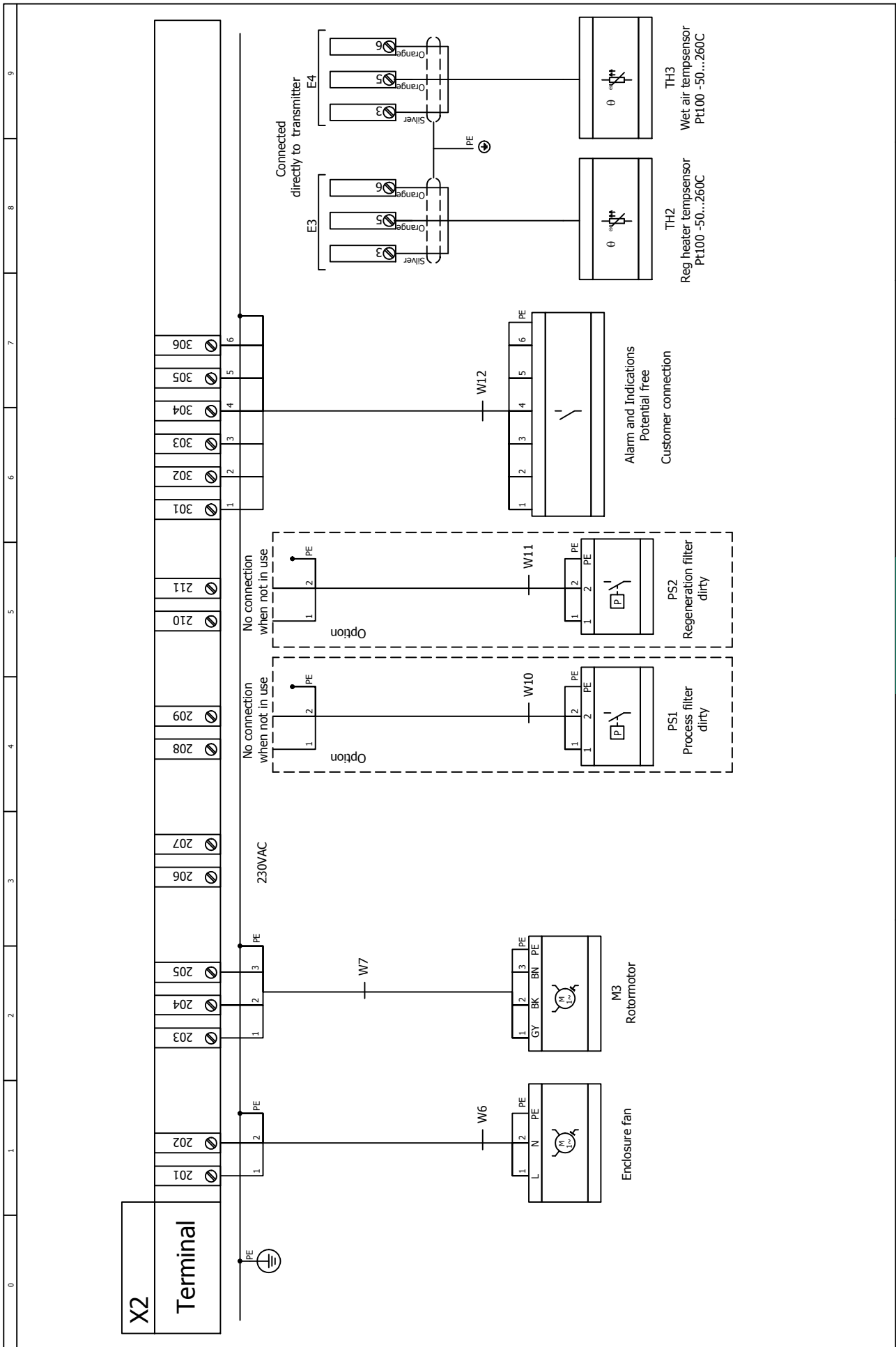
Approval
Version
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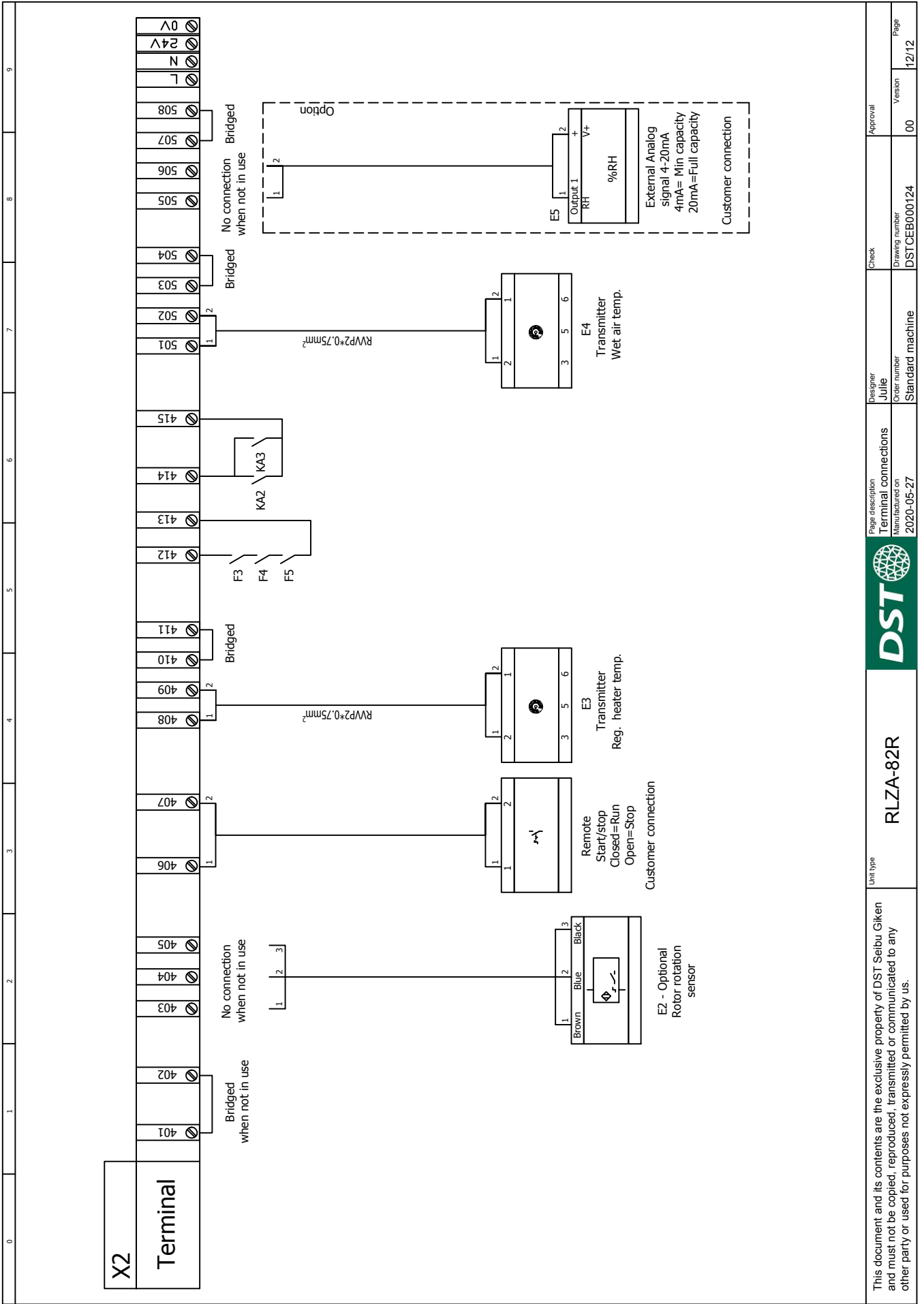
Unit type		Page description		Check		Approval	
RLZA-82R		Terminal connections		Drawing number		Version	
		Manufactured on		DSTCEB000124		00	
		2020-05-27		Standard machine		10/12	





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						Order number Standard machine		Drawing number DSTCEB000124		Version 00		Page 11/12	





0	1	2	3	4	5	6	7	8	9
Terminal									
X2									
RLZA-82R									
Unit type									
Page description Terminal connections Manufactured on 2020-05-27									
Designer Julie Order number Standard machine									
Check Drawing number DSTCEB000124									
Approval Version 00									
Page 12/12									



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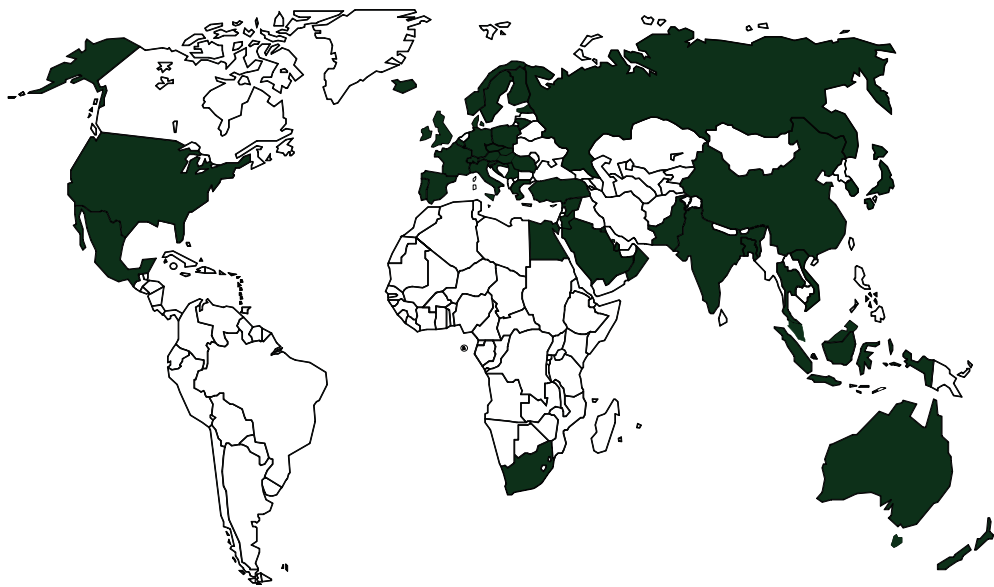
Harmful chemicals and solvents for rotors

SEIBU GIKEN CO.,LTD.

Reduced performance and/or rotor degradation is possible when adsorping the following substances.

	Substance	Note	Chemical formula	Cause
1	Oil vapor		N/A	Cloggs the micro pores on the silica gel/zeolite.
2	Ammonia	2ppm and above, prolonged exposure	NH ₃	Degrades the silica gel/zeolite.
3	Amine		RNH ₂	
4	Hydrogen fluoride		HF	Corrodes the silica gel/zeolite.
5	Sodium hydroxide	High concentration	NaOH	Dissolves the silica gel/zeolite.
6	Potassium hydrate	High concentration	KOH	Cloggs the micro pores on the silica gel/zeolite.
7	Lithium chloride		LiCl	
8	Sodium chloride		NaCl	
9	Potassium chloride		KCl	
10	Calcium chloride		CaCl	
11	Magnesium chloride		MgCl	
12	Aluminum chloride		AlCl ₃	
13	Seawater		N/A	
14	Strong acid	pH=3 and below	N/A	Deteriorates the honeycomb's physical structure.
15	Plasticizer		N/A	Cloggs the micro pores on the silica gel/zeolite.
16	Nitrogen oxides	High concentration, excessive exposure	NO _x	Deteriorates the honeycomb's physical structure.
17	Sulfur oxides	High concentration, excessive exposure	SO _x	
18	High-temperature steam	Exposod to vapor of 100 and above.	N/A	Cracks occurs on the honyecomb.
19	Heat solubility dust		N/A	Dust covers the silica gel/zeolite surface.

There is no guarantee that other substances beyond this list may reduce the dehumidification performance or damage the silica gel/zeolite.



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